

WO 2004/035782

1/39

SEQUENCE LISTING

- <110> ARTEMIS Pharmaceuticals GmbH
- <120> siRNA mediated gene silencing in transgenic animals
- <130> 032282wo JH/BM/short
- <140>
- <141>
- <160> 18
- <170> PatentIn Ver. 2.1
- <210> 1
- <211> 13139
- <212> DNA
- <213> Artificial Sequence

- <220>
- <223> Description of Artificial Sequence: Rosa26 locus
sequence

<400> 1

aagcttctca	cgtagcaacc	agagctccag	agccagcage	tgetgcccgc	ttgtatactc	60
actcctgtga	tccaacacag	gagcaacett	ttcttttacc	cacccccact	tcttaacaca	120
cttttttttg	gggggggggg	gggaacaagt	gctccatgct	ggaaggattg	gaactatgct	180
tttagaaaag	aacaatccta	aggtcacttt	taaattgagg	tctttgattt	gaaaatcaac	240
aaataccaaa	ttccaaatat	tcgttttaat	taaaccagca	atgtggatat	aagcattaag	300
tttttagttt	aaaafaggtc	attttccaaa	cattcagcaa	tcataattta	atttacagct	360
aggaacaaga	gccttgggtc	atgtcctacc	aaagaacata	actcaatatt	ctacacatga	420
caatctgaat	aaccttaaa	cctctaatec	cataacaggc	cacaaatttt	ggacagagaa	480
ctaattgatc	tcctgagaaa	actggaagaa	atccagggaa	aagaaattcc	tgtgtcctcc	540
aaactcagaa	atctctaat	atgtcagtat	tctctgcttt	agtcctaggt	cagattgcac	600
acatctaaaa	taacctctta	aagttttcct	cctagcgacc	taaaccatta	ttaatatcaa	660
attaaccatc	aaaacacttt	cctctcaata	tgetgcacac	aaacctcctc	ctggaacctc	720
ctccatctgg	atcctcccca	atcaaaaagta	taggtattta	acataataag	aaggaagtaa	780
tgtaaacatg	accttgggtc	caaatatgtc	atctaaaaac	aatttagtca	aggtatggag	840
gaaattcgag	aacctgaatc	tttttaagta	ttttgagcac	aggaacaatt	ggcaaaagga	900
atccaggtat	agacaaaacc	cagagcccag	agctctgggc	gaaaaatgag	ttgctggtga	960
agacgttaca	caagtaacat	gagaaagcag	aaaatgcagg	tcattccacg	acccctgacc	1020
caggccagca	gggcgggctg	cagcatcagt	acacaggaga	aagatcctta	ttcctaagaa	1080
tgagaaaggc	aaaggcgccc	gatagaataa	attagcatag	aaggggcttt	cccaggagtt	1140
aaaactttcc	ttctgagcga	ttacctacta	aaaccagggc	ttttgcccac	taccatttac	1200
ctaggatctt	ggcttgcaag	gattcatagg	ggcatatccc	tccccctctt	cttttagagt	1260
gttcttaaaa	gatcgctctc	cacgcccctg	gcagggaata	cgacaaaate	tgggtcaatt	1320
ccaggctaga	accctacaaa	ttcaacaggg	atatcgcaag	gatactgggg	catacgccac	1380
agggagtcca	agaatgtgag	gtgggggtgg	cgaaggtaat	gtctttggtg	tgggaaaagc	1440
agcagccatc	tgagatagga	actggaaaac	cagaggagag	gcgttcagga	agattatgga	1500
ggggaggact	gggccccccac	gagcgaccag	agttgtcaca	aggccgcaag	aacaggggag	1560
gtggggggct	cagggacaga	aaaaaaagta	tgtgtatttt	gagagcaggg	ttgggaggcc	1620
tctcctgaaa	aggggtataaa	cgtggagtag	gcaataccca	ggcaaaaagg	ggagaccaga	1680
gtagggggag	gggaagagtc	ctgaccagag	gaagacatta	aaaaggtagt	ggggtcgact	1740
agatgaaggga	gagcgtttct	ctctggggca	gagcgggtga	atgggtgtga	aaggtacgtg	1800
agaagacgaa	aaggggcaagc	atcttcctgc	taccaggctg	gggaggccca	ggcccaagac	1860
cccagggaga	gggaacgcag	gggagactgag	gtgacccttc	tttcccccg	ggcccggtcg	1920
tgtggttcgg	tgtctctttt	ctgttggaac	cttaccttga	cccaggcgct	gccggggcct	1980
gggcccgggc	tgcggcgcac	ggcactccc	ggaggcagcg	agactcgagt	taggcccac	2040
ggggcgccac	ggcgtttcct	ggccgggaat	ggcccgtagc	cgtgaggtgg	gggtgggggg	2100
cagaaaaggc	ggagcgagcc	cgagcgggga	gggggagggc	caggggcgga	gggggcccgc	2160
actactgtgt	tggcggactg	gcgggactag	ggctgcgtga	gtctctgagc	gcaggcgggc	2220
ggcgggccgc	cctcccccg	cggcggcagc	ggcggcagcg	gcggcagctc	actcagcccg	2280

BEST AVAILABLE COPY

WO 2004/035782

2/39

PCT/EP2003/011233

ctgcccgcagc	ggaaacgcca	ctgaccgcac	ggggattccc	agtgcgggog	ccaggggcac	2340
gcgggacacg	ccccctccc	ccgcgccatt	ggcctctccg	cccaccgccc	cacacttatt	2400
ggccggtgcg	ccgccaatca	gcggaggetg	ccggggccgc	ctaaagaaga	ggctgtgctt	2460
tggggctccg	gctcctcaga	gagcctcgcc	taggtagggg	atcgggactc	tggcgggagg	2520
gcggettggg	gcgtttgcgg	ggatggggcg	ccgcggcagg	ccctccgagc	gtgggtggagc	2580
cgttctgtga	gacagccggg	tacgagtcgt	gacgctggaa	ggggcaagcg	ggtgggtgggc	2640
aggaatgcgg	tccgccctgc	agcaaccgga	gggggaggga	gaaggagcg	gaaaagtctc	2700
caccggacgc	ggccatggct	cggggggggg	ggggcagcgg	aggagcgctt	ccggccgacg	2760
tctcgtcget	gattggcttc	tttccctccc	gccgtgtgtg	aaaacacaaa	tggcgtgttt	2820
tggttggcgt	aaggcgctg	tcagttaaag	gcagccggag	tgcgcagccg	ccggcagoc	2880
cgtctcgccc	actgggtggg	gcgggaggta	ggtgggggtg	ggcgagctgg	acgtgcgggc	2940
gcggtcggcc	tctggcgggg	cgggggaggg	gagggagggt	cagcgaaagt	agctcgcgcg	3000
cgagcggccg	cccaccctcc	octtccctcg	ggggagtcgt	tttaccgccc	gccggccggg	3060
cctcgtcgtc	tgattggctc	tcggggccca	gaaaactggc	ccttgccatt	ggctcgtgtt	3120
cgtgcaagtt	gagtcctacc	gccggccagc	ggggcgccgc	aggaggcgct	cccaggttcc	3180
ggccctcccc	tcggccccgc	gccgcagagt	ctggccgcgc	gcccctgcgc	aacgtggcag	3240
gaagcgcgcg	ctggggggcg	ggacgggcag	tagggctgag	cggctgcggg	gcgggtgcaa	3300
gcacgtttcc	gacttgagtt	gcctcaagag	ggcgtgtgtg	agccagacct	ccatcgcgca	3360
ctccggggag	tggaggggaag	gagcgagggc	tcagttgggc	tgttttgagg	gcaggaagca	3420
cctgctctcc	caaagtccgt	ctgagtttgt	atcagtaagg	gagctgcagt	ggagtaggcg	3480
gggagaaggc	cgccaccttc	tcgggagggg	ggagggaggt	gttgcaatac	ctttctggga	3540
gttctctgct	gcctcctggc	ttctgaggac	gcctctgggc	ctgggagaat	ccctccccc	3600
tcttccctcg	tgatctgcaa	ctccagtcct	tctagaagat	gggcgggagt	cttctggcca	3660
ggcttaaagg	ctaacctggg	gtgtgggcgt	tgctctgcag	gggaattgaa	caggtgtaaa	3720
attggaggga	caagacttcc	cacagatttt	cggttttgtc	gggaagtttt	ttaatagggg	3780
caaataagga	aaatgggagg	ataggtagtc	atctgggggt	ttatgcagca	aaactacagg	3840
ttattattgc	ttgtgatccg	cctcggagta	ttttccatcg	aggtagatta	aagacatgct	3900
cacccgagtt	ttatactctc	ctgcttgaga	tccttactac	agtatgaaat	tacagtgtcg	3960
cgagttagac	tatgtaagca	gaattttaat	catttttaaa	gagcccagta	cttcataatc	4020
atttctcccg	ctccttctgc	agccttatca	aaaggatttt	tagaacactc	attttgcccc	4080
catttttcatt	tattatactg	gcttatccaa	cccctagaca	gagcattggc	attttccott	4140
tectgatctt	agaagtctga	tgactcatga	aaccagacag	attagttaca	tacaccacaa	4200
atcgaggotg	tagctggggc	otcaacactg	cagttctttt	ataactcctt	agtacacttt	4260
ttgttgatcc	tttgccctga	tccttaattt	tcagtgctta	tcacctctcc	cgtcagtggt	4320
gttccacatt	tgggcctatt	ctcagtcocg	ggagttttac	aacaatagat	gtattgagaa	4380
tccaacctaa	agcttaactt	tcactcccca	tgaatgcctc	tctccttttt	ctccatttat	4440
aaactgagct	attaaccatt	aatgggttcca	ggtggagtgc	tcctccocat	attacctgat	4500
gtatcttaca	tattgccagg	ctgataattt	aagacattaa	aaggatatatt	tcattattga	4560
gccacatggt	attgattact	gcttactaaa	attttgtcat	tgtaacacatc	tgtaaaaggt	4620
ggttcctttt	ggaatgcaaa	gttcaggtgt	ttgttgcttt	tcctgacctc	aggtcttggt	4680
agcttgatatt	ttttctattt	aagcagtgct	ttctcttgga	ctggcttgac	tcatggcatt	4740
ctacacgtta	ttgctggctc	aaatgtgatt	ttgccaagct	tcttcaggac	ctataatttt	4800
gcttgacttg	tagccaaaac	caagtaaaat	gattaagcaa	caaatgtatt	tgtgaagctt	4860
ggtttttagg	ttgttggttt	gtgtgtgctt	gtgctctata	ataactatct	ccaggggctg	4920
gagaggtggc	tcggagttca	agagcacaga	ctgctcttcc	agaagtctcg	agttcaattc	4980
ccagcaacca	catgggtggc	cacaaccatc	tgtaatggga	tctgatgccc	tcttctgggt	5040
tgtctgaaga	ccacaagtgt	attcacatta	aataaataaa	tcctccttct	tcttcttttt	5100
ttttttttta	aagagaatac	tgtctccagt	agaatttact	gaagtaatga	aatactttgt	5160
gtttgtttcca	atatggtagc	caataatcaa	attactcttt	aagcactgga	aatgttacca	5220
aggaactaat	ttttatttga	agtgtaaactg	tggacagagg	agccataact	gcagacttgt	5280
gggatacaga	agaccaatgc	agactttaat	gtcttttctc	ttacactaag	caataaagaa	5340
ataaaaattg	aacttctagt	atcctatttg	tttaaactgc	tagctttact	taacttttgt	5400
gcttcatcta	tacaaagctg	aaagctaagt	ctgcagccat	tactaaacat	gaaagcaagt	5460
aatgataatt	ttggatttca	aaaatgtagg	gccagagttt	agccagccag	tgggtggtgt	5520
tgcccttatg	cctttaatcc	cagcactctg	gaggcagaga	caggcagatc	tctgagtttg	5580
agcccgagct	ggtctacaca	tcaagttcta	tctaggatag	ccaggaatac	acacagaaac	5640
cctgttgggg	agggggggctc	tgagatttca	taaaattata	attgaagcat	tccctaatag	5700
gccactatgg	atgtggctaa	atccgtctac	ctttctgatg	agatttggtg	attatttttt	5760
ctgtctctgc	tggtgggttg	gtcttttgac	actgtgggct	ttctttaaag	cctccttcct	5820
gccatgtggt	ctctgttttg	ctactaactt	cccagggctt	aatggcatg	gctttttgcc	5880
ttctaagggc	agctgctgag	atgtgcagcc	tgatttccag	ggtgggggtg	ggaaattctt	5940
caaacactaa	aattgtcctt	taattttttt	tttaaaaaat	gggttatata	ataaacctca	6000
taaaatagtt	atgaggagtg	aggtggacta	atattaaatg	agtccctccc	ctataaaaga	6060

WO 2004/035782

PCT/EP2003/011233

3/39

gctattaagg	ctttttgtct	tataacttaac	ttttttttta	aatgtggtat	ctttagaacc	6120
aaggggtctta	gagtttttagt	atacagaaac	tggtgcatcg	cttaatcaga	ttttctagtt	6180
tcaaatccag	agaatccaaa	ttcttcacag	ccaaagtcaa	attaagaatt	tctgactttt	6240
aatgttaatt	tgcttactgt	gaatataaaa	atgatagctt	ttcctgaggc	aggggtctcac	6300
tatgtatctc	tgcttgatct	gcaacaagat	atgtagacta	aagttctgcc	tgcttttgtc	6360
tcctgaatac	taaggttaaa	atgtagtaat	acttttgtaa	cttgaggtc	agattctttt	6420
ataggggaca	cactaaggga	gcttgggtga	tagttggtaa	aatgtgttc	aagtgatgaa	6480
aacttgaatt	attatcaccg	caacctactt	tttaaaaaaa	aaagccaggc	ctgttagagc	6540
atgcttaagg	gatccctagg	acttgctgag	cacacaagag	tagttacttg	gcaggctoct	6600
gggtgagagca	tattttcaaaa	aacaaggcag	acaaccaaga	aactacagtt	aagggtacct	6660
gtcttttaaac	catctgcata	tacacaggga	tattaaaata	ttccaaataa	tatttcattc	6720
aagttttccc	ccatcaaatt	gggacatgga	tttctccggt	gaataggcag	agttggaaac	6780
taaacaaatg	ttggttttgt	gatttgtgaa	attgttttca	agtgatagtt	aaagcccatg	6840
agatacagaa	caaagctgct	atttcgaggt	ctcttggttt	atactcagaa	gcacttcttt	6900
gggtttccct	gcactatcct	gatcatgtgc	taggcctacc	ttaggetgat	tggtgttcaa	6960
ataaacttaa	gtttcctgtc	aggtgatgtc	atatgatttc	atatatcaag	gcaaaacatg	7020
ttatatatgt	ttaaactttg	tacttaatgt	gaaagttagg	tctttgtggg	tttgattttt	7080
aattttcaaa	acctgagcta	aataagtcac	ttttacatgt	cttacatttg	gtggaattgt	7140
ataattgtgg	tttgaggca	agactctctg	acctagtaac	cctacctata	gagcactttg	7200
ctgggtcaca	agtctaggag	tcaagcattt	caccttgaag	ttgagacgtt	ttgttagtgt	7260
atactagttt	atatgttgga	ggacatgttt	atccagaaga	tattcaggac	tatttttgac	7320
tgggctaagg	aattgattct	gattagcact	gttagtgagc	attgagtggc	ctttaggctt	7380
gaattggagt	cacttgtata	tctcaaataa	tgctggcctt	ttttaaaaag	cccttgttct	7440
ttatcacctc	gttttctaca	taatttttgt	tcaaaagaaat	acttgtttgg	atctcctttt	7500
gacaacaata	gcatgttttc	aagccatatt	ttttttcctt	tttttttttt	tttttggttt	7560
ttcgagacag	ggtttctctg	tatagccctg	gctgtcctgg	aactcacttt	gtagaccagg	7620
ctggcctcga	actcagaaat	ccgcctgect	ctgcctcctg	agtgcgggga	ttaaaggcgt	7680
gcaccaccac	gcctggctaa	gttggtatatt	ttgttatata	actataacca	atactaactc	7740
cactgggtgg	atttttaatt	cagtcagtag	tcttaagtgg	tctttatttg	cccttcatta	7800
aaactactct	ttcactctaa	cagaggctgt	tggtactagt	ggcacttaag	caacttccta	7860
cggatatact	agcagattaa	gggtcaggga	tagaaactag	tctagcgttt	tgtataccta	7920
ccagctttat	actaccttgt	tctgatagaa	atatttcagg	acatctagag	tgtactataa	7980
gggtgatggg	aagcttataa	ggaaactgaa	agtggagtta	ctactccatt	tctotgaggg	8040
gagaattaaa	atttttgacc	aagtgttggt	gagccactga	gaatgggtctc	agaacataac	8100
ttcttaagga	accttccag	attgccctca	acactgcacc	acatttggtc	ctgcttgaac	8160
attgccatgg	ctcttaaagt	cttaattaa	aatatttaatt	gtgtaattat	tgtttttctc	8220
ccttttagatc	attccttgag	gacaggacag	tgcttggtta	aggctatatt	tctgctgtct	8280
gagcagcaac	aggctctoga	gatcaacatg	atgttcataa	tcccaagatg	ttgccattta	8340
tgttctcaga	agcaagcaga	ggcatgatgg	tcagtgcacg	taatgtcact	gtgttaaatg	8400
ttgctatgca	gtttggattt	ttotaatgta	gtgtaggtag	aacatatgtg	ttctgtatga	8460
attaaactct	taagttacac	cttggtataat	ccatgcaatg	tgttatgcaa	ttaccatttt	8520
aagtattgta	gctttctttg	tatgtgagga	taaaggtgtt	tgtcataaaa	tgttttgaac	8580
atttccccaa	agttccaaat	tataaaacca	caacgttaga	acttatttat	gaacaatggt	8640
tgtagtttca	tgctttttaa	atgottaatt	attcaattaa	caccgtttgt	gttataatat	8700
atataaaact	gacatgtaga	agtgtttgtc	cagaacattt	cttaaatgta	tactgtcttt	8760
agagagttta	atatagcattg	tcttttgcaa	catactaact	tttgtgttgg	tgcgagcaat	8820
atttgttagt	catttttgaaa	ggagtcattt	caatgagtg	cagattgttt	tgaatgttat	8880
tgaacatttt	aaatgcagac	ttgttcgtgt	tttagaaagc	aaaactgtca	gaagctttga	8940
actagaaatt	aaaaagctga	agtatttcag	aagggaaata	agctacttgc	tgtattagtt	9000
gaaggaaagt	gtaatagctt	agaaaattta	aaaccatata	gttgtcattg	ctgaatatct	9060
ggcagatgaa	aagaaatact	cagtggttct	tttgagcaat	ataacagctt	gttatatttaa	9120
aaattttccc	cacagatata	aactotaatc	tataactcat	aaatgttaca	aatggatgaa	9180
gcttacaatt	gtggcttgac	ttgtcactgt	gcttggttta	gttatgtgaa	agtttggtcaa	9240
taaacctatg	tcttaaatag	tcaaaactgtg	gaatgacttt	ttaatctatt	ggtttgccta	9300
gaacagttat	gttgccattt	gccctaattg	tgaagaaaaa	agtggggagt	gccttggcac	9360
tggtcatttg	tggtgtgaac	caaagagggg	ggcatgcact	tacacttcaa	acatcctttt	9420
gaaagactga	caagtttggg	tcttcacagt	tggaattggg	catccctttt	gtcagggagg	9480
gagggaggga	gggaggctgg	cttggtatgc	tgacaagtgt	gattaaattc	aaactttgag	9540
gtaagttgga	ggaacttgta	cattgttagg	agtgtgacaa	tttggaactc	taatgatttg	9600
gtcatacaaa	atgaacctag	accaacttct	ggaagatgta	tataataact	ccatgtttaca	9660
ttgattttcac	ctgactaata	cttatccctt	atcaattaaa	tacagaagat	gccagccatc	9720
tgggcctttt	aaccagaaa	tttagtttca	aactcctagg	ttagtgttct	cactgagcta	9780
catcctgac	tagtcctgaa	aataggacca	ccatcacccc	caaaaaaatc	tcaataaaga	9840

WO 2004/035782

PCT/EP2003/011233

4/39

tttatgctag	tgtttcaaaa	ttttaggaat	aggtaagatt	agaaagtttt	aaattttgag	9900
aaatggcttc	tctagaaaaga	tgtacatagt	gaacactgaa	tggctcctaa	agagcctaga	9960
aaactgggtac	tgagcacaca	ggactgagag	gtctttcttg	aaaagcatgt	attgctttac	10020
gtgggtcaca	gaaggcaggc	aggaagaact	tgggctgaaa	ctgggtgtctt	aagtggctaa	10080
catcttcaca	actgatgagc	aagaacttta	tcctgatgca	aaaaccatcc	aaacaaacta	10140
agtgaagggt	ggcaatggat	cccaggctgc	tctagaggag	gacttgactt	ctcatcccat	10200
caccacacc	agatagctca	tagactgcca	attaxacca	gcttctagcc	tccacaggca	10260
cctgcactgg	tacacataat	ttcacacaaa	cacagtaaga	agccttccac	ctggcatggt	10320
attgcttata	tttagttccc	aacacttggg	aggcagaggc	cagccagggc	tatgtgacaa	10380
aaaccttgct	tagaggagaa	acttcatagc	ttatttccta	ttcacgtaac	caggttagca	10440
aaatttacca	gccagagatg	aagctaacag	tgtccactat	atttgtagtg	ttttaagtca	10500
attttttaaa	tatacttaat	agaattaaag	ctatggtgaa	ccaagtacaa	acctggtgta	10560
ttaacttgag	aacttagcat	aaaaagt'agt	tcatttggtc	agtaaatatt	aaatgcttac	10620
tggcaaatgat	tatgtcagga	acttggtaaa	tgggtgatgaa	acaatcatag	ttgtacatct	10680
tgggtctctg	atcaccttgg	tttgaggtaa	aagtggttcc	tttgatcaag	gatggaattt	10740
taagtttata	ttcaatcaat	aatgtattat	tttgtgattg	caaaattgcc	tatctagggt	10800
ataaaacctt	taaaaatttc	ataataccag	ttcattctcc	agttactaat	tccaaaagc	10860
cactgactat	ggtgccaatg	tggattctgt	totcaaagga	aggattgtct	gtgcccttta	10920
ttctaataga	aacatcacac	tgaaaatcta	agctgaaaga	agccagactt	tcctaaataa	10980
ataactttcc	ataaagctca	aacaaggatt	acttttagga	ggcactgtta	aggaactgat	11040
aagtaatgag	gttaacttata	taatgatagt	cccacaagac	tatctgagga	aaaactcagta	11100
caactcgaaa	acagaacaac	cagctaggca	ggaataacag	ggctcccaag	tcaggaggctc	11160
tatccaacac	ccttttctgt	tgagggcccc	agacctacat	attgtataca	aacaggagg	11220
tgggtgattt	taactctcct	gaggtaacct	ggtaaatctt	tgtcctgagt	aagcagtaca	11280
gtgtacagtt	tacattttca	tttaaagata	catttagctcc	ctctacccc	taagactgac	11340
aggcaotttg	ggggtgggga	gggctttgga	aaataacgct	tccatacact	aaaagagaaa	11400
tttctttaat	taggcttgtt	ggttccatct	atctactggt	gtttctacta	cttagtaata	11460
ttataatagt	cacacaagca	tctttgctct	gttttaggtg	tatatattat	ttaaggcaga	11520
tgataaaaact	gtagatctta	agggatgctt	ctgcttctga	gatgatataa	agaatttaga	11580
ccataaaaaca	gtagggttga	caagcaatag	aatatggcct	aaagtgttct	gacacttaga	11640
agccaagcag	tgtaggcttc	ttaagaaata	ccattacaat	caccttgcta	gaaatcaagc	11700
attctggagt	ggtcaagcag	tgtaacctgt	actgtaagtt	acttttctgc	tatttttctc	11760
ccaaagcaag	ttctttatgc	tgatatttcc	agtgttagga	actacaaata	ttaataagtt	11820
gtcttcactc	ttttctttac	caaggagggt	ctcttccttc	atottgatct	gaaggatgaa	11880
caaaggcttg	agcagtgcgc	tttagaagat	aaactgcagc	atgaaggccc	cogatgttca	11940
cocagactac	atggaccttt	cgccacacat	gtcccattcc	agataaggcc	tggcacacac	12000
aaaaaacata	agtcattagg	ctaccagtct	gattctaaaa	caacctaaaa	tcttcccact	12060
taaagtctat	gggtggtggg	ttggaaagtt	gactcagaaa	atcacttgct	gttttttagag	12120
aggatctggg	ttcagtttct	gatacattgt	ggcttacaac	tataactcca	gttctagggg	12180
gtccatccaa	catcctcttc	tgttgagggc	accaaataaa	tgtattgtgt	acaaacaggg	12240
aggtgagtga	tttaactctc	gtgtatagta	ccttggtaaa	acatttcttg	tcctgagtaa	12300
gcagtacagc	tctgcctgtc	cctggtctac	agacacggct	catttcccga	aggcaagctg	12360
gatagagatt	ccaatttctc	ttcttggatc	ccatccata	aaagaaggte	aagtttaatc	12420
tattgcaaaa	ggtaaatagg	tagtttctta	catgagacaa	gaacaaatct	taggtgtgaa	12480
gcagtcactc	tttacaggcc	agagcctcta	ttctatgcca	atgaaggaaa	ctgttagtcc	12540
agtgttatag	agttagtcca	gtgtatagtt	ttctatcaga	acactttttt	tttaaacac	12600
tgcaacttag	cttattgaag	acaaaccacg	agtagaaatc	tgtccaagaa	gcaagtgtct	12660
ctcagcotac	aatgtggaat	aggaccatgt	aatggtagag	tgagtgaat	gaattatggc	12720
atgtttttct	gactgagaag	acagtacaat	aaaaggtaaa	ctcatgggat	ttatttataa	12780
agaatccaat	ttctaccttt	ttccaaatgg	catatctgtt	acaataatat	ccacagaagc	12840
agttctcagt	gggaggttgc	agatatccca	ctgaacagca	tcaatgggca	aacccagggt	12900
tgtttttctg	tggagacaaa	ggtaagatat	ttcaatatat	tttcccaagc	taattagagt	12960
gctcagcaaa	taatggtaact	ggccattaag	tctcatgacc	tgagcttgat	cctcagggac	13020
catgtggtac	aaggagagac	ctaaatcctt	cagttggact	tcaatcttct	accctcatgt	13080
ccacacacaa	ataaatataa	taaaaaacat	tctgcagtgc	aatttctaaa	agggcgaat	13139

<210> 2

<211> 5409

<212> DNA

<213> Artificial Sequence

<220>

WO 2004/035782

PCT/EP2003/011233

5/39

<223> Description of Artificial Sequence: sequence of
homology region

<400> 2

caggccctcc	gagcgtggtg	gagccgttct	gtgagacagc	cgggtacgag	tctgacgct	60
ggaaggggca	agcgggtggt	gggcaggaat	gcggtccgcc	ctgcagcaac	cggaggggga	120
gggagaaggg	agcggaaaag	tctccaccgg	acggggccat	ggctcggggg	ggggggggca	180
gcggaggagc	gcttccggcc	gacgtctcgt	cgctgattgg	cttcttttcc	tcccgcctg	240
tgtgaaaaca	caaatggcgt	gttttggttg	gcgtaaggcg	cctgtcagtt	aacggcagcc	300
ggagtgcgca	gccgcgggca	gcctcgctct	gcccactggg	tggggcgggg	ggtaggtggg	360
gtgaggcgag	ctggacgtgc	gggcgcggtc	ggcctctggc	ggggcggggg	aggggagggg	420
gggtcagcga	aagtagctcg	cgcgcgagcg	gccgccacc	ctccccttcc	tctgggggag	480
tcgttttacc	cgcgcgcggc	cgggcctcgt	cgtctgattg	gctctcgggg	ccagaaaaac	540
tggcccttgc	cattggctcg	tgttcgtgca	agttgagtc	atccgcgggc	cagcgggggc	600
ggcagaggag	cgctcccagg	ttccggccct	cccctcggcc	cgcgcggcga	gagtctggcc	660
gogcgcctct	gogcaacgtg	gcaggaagcg	cgcgctgggg	gcggggacgg	gcagtagggc	720
tgcgggactg	cggggcgggg	gcaagcacgt	ttccgacttg	agttgcctca	agagggcgct	780
gctgagccag	acctccatcg	cgcactccgg	ggagtggagg	gaaaggagcga	gggctcagtt	840
gggctgtttt	ggaggcagga	agcacttget	ctcccaaagt	cgctctgagt	tgttatcagt	900
aaggagagctg	cagtggagta	ggcggggaga	aggccgcacc	cttctccgga	ggggggaggg	960
gagtgttgca	atacctttct	gggagttctc	tgtgcctcc	tggcttctga	ggaccgccct	1020
gggcctggga	gaatcccttc	cccctcttcc	ctcgtgatct	gcaactccag	tctttctaga	1080
agatgggchg	gagtcctctg	ggcaggctta	aaggctaacc	tgggtgtgtg	gcgttgctct	1140
gcaggggaat	tgaacaggtg	taaaattgga	gggacaagac	ttcccacaga	ttttcggttt	1200
tgtcgggaag	ttttttaata	ggggcaataa	aggaaaatgg	gaggataggt	agtcactctg	1260
ggttttatgc	agcaaaaacta	caggttatta	ttgcttgtga	tccgcctcgg	agtattttcc	1320
atcgaggtag	attaaagaca	tgtcaccocg	agttttatac	tctcctgctt	gagatcctta	1380
ctacagtatg	aaattacagt	gtcgcgagtt	agactatgta	agcagaattt	taatcatttt	1440
taaagagccc	agtaactcat	atccatttct	cccgtcctt	ctgcagcctt	atcaaaaggt	1500
attttagaac	actcatttta	gccccatttt	catttattat	actggcttat	ccaaccctta	1560
gacagagcat	tggcattttc	cctttcctga	tcttagaagt	ctgatgactc	atgaaaccag	1620
acagattagt	tacatacacc	acaaatcgag	gctgtagctg	gggcctcaac	actgcagttc	1680
ttttataact	ccttagtaca	ctttttgttg	atcctttgcc	ttgatcctta	attttcagtg	1740
tctatcacct	ctcccgtcag	tgggtgttcca	catttgggcc	tattctcagt	ccagggagtt	1800
ttacaacaat	agatgtattg	agaatccaac	ctaaagctta	actttccact	cccatgaatg	1860
cctctctcct	ttttctccat	ttataaaactg	agctatttaac	cattaatggg	tccaggtgga	1920
tgtctcctcc	ccatattacc	tgatgtatct	tacatattgc	caggctgata	ttttaagaca	1980
ttaaaaggta	tatttcatta	ttgagccaca	tggatttgat	tactgcttac	taaaattttg	2040
tcattgtaca	catctgtaaa	aggtggttcc	ttttggaatg	caaagttcag	gtgtttgttg	2100
tctttcctga	cctaaggtct	tgtgagcttg	tattttttct	atttaagcag	tgttttctct	2160
tggactggct	tgaactcatg	cattctacac	gttattgctg	gtctaaatgt	gattttgcca	2220
agcttcttca	ggacctataa	ttttgcttga	ctttagacca	aacacaagta	aaatgattaa	2280
gcaacaaatg	tatttgtgaa	gcttgggtttt	taggttggtg	tgttgtgtgt	gcttgtgtct	2340
tataataata	ctatccaggg	gctggagagg	tggctcggag	ttcaagagca	cagactgtct	2400
ttccagaagt	cctgagttca	attcccagca	accacatggt	ggctcacaac	catctgtaat	2460
ggatctgat	gccctcttct	ggtgtgtctg	aagaccacaa	gtgtattcac	attaaataaa	2520
taaatcctoc	ttcttcttct	tttttttttt	tttaaagaga	atactgtctc	cagtagaatt	2580
taotgaagta	atgaaatact	ttgtgtttgt	tccaatatgg	tagccaataa	tcaaattact	2640
ctttaagcac	tggaaatgtt	accaaggaac	taatttttat	ttgaagtgtg	actgtggaca	2700
gaggagccat	aactgcagac	ttgtgggata	cagaagacca	atgcagactt	taatgtcttt	2760
tctcttacac	taagcaataa	agaaataaaa	attgaacttc	tagtatccta	tttgtttaaa	2820
ctgctagctt	tacttaactt	ttgtgcttca	tctatacaaa	gctgaaagct	aagtctgcag	2880
ccattactaa	acatgaaagc	aagtaatgat	aattttggat	ttcaaaaatg	tagggccaga	2940
gcttagccag	ccagtgggtg	tgcctgcctt	tatgccttta	atcccagcac	tctggaggca	3000
gagacaggca	gatctctgag	tttgagccca	gcctggctca	cacatcaagt	tctatctagg	3060
atagccagga	atacacacag	aaaccctgtt	ggggaggggg	gctctgagat	ttcataaaat	3120
tataattgaa	gcattcccta	atgagccact	atggatgtgg	ctaaatccgt	ctacotttct	3180
gatgagattt	gggtattatt	ttttctgtct	ctgctgttgg	ttgggtcttt	tgacactgtg	3240
ggcttttctt	aaagcctcct	tcctgccatg	tggctctctg	tttgctacta	acttcccctg	3300
gcttaaatgg	catggctttt	tgccttctaa	gggcagctgc	tgagatttgc	agcctgattt	3360
ccaggggtgg	gttgggaaat	ctttcaaaca	ctaaaattgt	cctttaattt	tttttttaaa	3420
aaatgggtta	tataataaac	ctcataaaat	agttatgagg	agtgaggtgg	actaatatta	3480
aatgagtcct	tcccctataa	aagagctatt	aaggcttttt	gtcttatact	taactttttt	3540

WO 2004/035782

PCT/EP2003/011233

6/39

```

tttaaatgtg gtatcttttag aaccaagggt cttagagttt tagtatacag aaactgttgc 3600
atcgcttaaat caga::tttct agttttcaaat ccagagaatc caaattcttc acagccaaag 3660
tcaaattaag aattictgac ttttaatgtt aatttgctta ctgtgaatat aaaaatgata 3720
gcttttcctg aggcagggtc tcaactatgta tctctgctg atctgcaaca agatatgtag 3780
actaaagtcc tgcttgcctt tgtctcctga atactaaggt taaaatgtag taatactttt 3840
ggaacttgca ggtcagattc ttttataggg gacacactaa gggagcttgg gtgatagttg 3900
gtaaaatgtg tttcaagtga tgaaaacttg aattattatc accgcaacct acttttttaa 3960
aaaaaaagcc aggcctgtta gagcatgctt aagggatccc taggacttgc tgagcacaca 4020
agagtgtta cttggcaggc tcctggtgag agcatatttc aaaaaacaag gcagacaacc 4080
aagaaactac agttaagggt acctgtcttt aaccactctg catatacaca gggatattaa 4140
aatattccaa ataattttt attcaagttt tcccccatca aattgggaca tggatttctc 4200
cgggtgaatag gcagagttgg aaactaaaca aatgttggtt ttgtgatttg tgaattgtt 4260
ttcaagtgat agttaagcc catgagatac agaacaagc tgctatttcg aggtctcttg 4320
gtttatactc agaagcactt ctttgggttt ccctgcacta tcctgatcat gtgctaggcc 4380
taccttaggc tgattgttgt tcaaataaac ttaagtttcc tgtcaggtga tgtcatatga 4440
tttcatatat caaggcaaaa catgttatat atgttaaaca tttgtactta atgtgaaagt 4500
taggtctttg tgggtttgat ttttaatttt caaaacctga gctaaataag tcattttttac 4560
atgtcttaca tttgggtgaa ttgtataatt gtggtttgca ggcaagactc tctgacctag 4620
taacctacc tatagagcac tttgctgggt cacaagtcta ggagtcaagc atttcacctt 4680
gaagttgaga cgtttttgta gtgtatacta gtttatatgt tggaggacat gtttatccag 4740
aagatattca ggaactattt tgactgggct aaggaattga ttctgattag cactgttagt 4800
gagcattgag tggccttttag gcttgaattg gagtcaottg tatactctca ataatgctgg 4860
ccttttttaa aaagcccttg ttctttatca cctgttttcc tacataattt ttgttcaaag 4920
aaatacttgt ttggatctcc ttttgacaac aatagcatgt tttcaagcca tatttttttt 4980
cctttttttt ttttttttg gtttttcgag acagggtttc tctgtatagc cctggctgtc 5040
ctggaactca ctttgtagac caggctggcc tcgaactcag aaatccgctt gcctctgect 5100
cotgagtgcc gggattaaag gcgtgcacca ccacgcctgg ctaagttgga tattttgtta 5160
tataactata accaatacta actccactgg gtggattttt aattcagtca gtagtcttaa 5220
gtggtcttta ttggoccttc attaaaatct actgttcaact ctaacagagg ctgttggtac 5280
tagtggaact taagcaactt cctacggata tactagcaga ttaagggtca gggatagaaa 5340
ctagtctage gttttgtata cctaccagct ttatactacc ttgttctgat agaaatattt 5400
caggacatc
5409

```

<210> 3

<211> 4413

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Sequence of
Fluc-hygro insert

<400> 3

```

tctaggtaac cgatatcect gcaggggtga cctgcacgtc tagggcgag tagtccaggg 60
tttccttgat gatgtcatac ttatcctgtc cctttttttt ccacagctcg cggttgagga 120
caaaactctc gcggtctttc cagtactcct gcagggtgact gactgagtcg agatctgcga 180
tctaagtaag cttggcattc cgggtactgtt ggtaaagcca ccatggaaga cgccaaaaac 240
ataaagaaag gcccggegcc attctatccg ctggaagatg gaaccgctgg agagcaactg 300
cataaggcta tgaagagata cgccttggtt cctggaacaa ttgcttttac agatgcacat 360
atcgaggtgg acatcactta cgtgagtag ttcgaaatgt ccgttcgggtt ggcagaagct 420
atgaaacgat atgggctgaa taaaaatcac agaatcgtcg tatgcagtga aaactctctt 480
caattcttta tgccggtgtt gggcgcggtta tttatcggag ttgcagttgc gcccgcgaa 540
gacatttata atgaacgtga attgctcaac agtatgggca tttcgcagcc tacctgtgtg 600
ttcgtttcca aaaaggggtt gcaaaaaaatt ttgaacgtgc aaaaaaagct cccaatcatc 660
caaaaaatta ttatcatgga ttctaaaacg gattaccagg gatttcagtc gatgtacacg 720
ttcgtcacat ctcatctacc tcccggtttt aatgaatacg attttgtgcc agagtccttc 780
gatagggaca agacaattgc actgatcatg aactcctctg gatctactgg tctgcctaaa 840
ggtgtcgtc tgccctcatag aactgcctgc gtgagattct cgcatgccag agatccctatt 900
tttggcaatc aaatcattcc ggataactgcg attttaagtg ttgttccatt ccatcacggt 960
tttggaaatgt ttactacact cggatatttg atatgtggat ttcgagtcgt cttaatgtat 1020
agatttgaag aagagctgtt tctgaggagc cttcaggatt acaagattca aagtgcgctg 1080
ctggtgccaa ccctattctc cttcttcgcc aaaagcactc tgattgacaa ataccgattta 1140

```

WO 2004/035782

7/39

PCT/EP2003/011233

tctaatttac acgaaattgc ttctggtggc gctcccctct ctaagggaagt cggggaagcg 1200
gttgccaaga ggttccatct gccagggtatc aggcaaggat atgggctcac tgagactaca 1260
tcagctattc tgattacacc cgagggggat gataaacogg gcgcggtcgg taaagttggt 1320
ccattttttg aagcgaaggt tgtggatctg gataccggga aaacgctggg cgттаатсaa 1380
agaggcgaac tgtgtgtgag aggtcctatg attatgtccg gttatgtaaa caatccggaa 1440
gcgaccaacg ccttgattga caaggatgga tggctacatt ctggagacat agcttactgg 1500
gacgaagacg aacacttctt catcgttgac ogcctgaagt ctctgattaa gtacaaaggc 1560
tatcaggtgg ctcccgtga attggaatoc atcttgcctc aacaccccaa catcttcgac 1620
gcaggtgtcg caggtcttcc cgacgatgac gcgggtgaac ttccggccgc cgttggtggt 1680
ttggagcacg gaaagacgat gacggaaaaa gagatcgtgg attacgtcgc cagtcaagta 1740
acaaccgcga aaaagttgog cggaggagtt gtgtttgtgg acgaagtacc gaaaggtctt 1800
accgaaaaac tcgacgcaag aaaaatcaga gagatcctca taaaggccaa gaaggcgcgga 1860
aagatcgccg tgtaattcta gaccgggttcg agatccaggc gcggatcaat aaaagatcat 1920
tattttcaat agatctgtgt gttgggtttt tgtgtgcctt gggggagggg gaggccagaa 1980
tgaggcgogg ccaaggggga gggggaggcc agaatgacct tgggggaggg ggaggccaga 2040
atgaccttgg gggaggggga ggccagaatg agggcgccc ccgatccgtc gacgccctaa 2100
ggccatagcg gccgccctga ggccgcgggc gatcgctag gggtaacga agttcctata 2160
ctttctagag aataggaact tcggaatagg aacttcttat aatctagaag atctggatcc 2220
acgattcgag ggcccctgca ggtcaattct accgggtagg ggaggcgctt ttcccaaggc 2280
agtctggagc atgcgttta gcagcccccgc tggcacttgg cgctacacaa gtggcctctg 2340
gcctcgcaac cattccacat ccaccggtag cgccaaccgg ctccgttctt tgggtggcccc 2400
ttegcgccac cttctaotoc tcccctagtc aggaagttcc ccccgcccc gcagctcgcg 2460
tcgtgcagga cgtgacaaat ggaagtagca cgtctcacta gtctcgtgca gatggacagc 2520
accgctgagc aatggaagcg ggtaggcctt tggggcagcg gccaatagca gctttgctcc 2580
ttcgctttct gggctcagag gctgggaagg ggtgggtccg gggcggggt caggggcggg 2640
ctcagggcgg gggcgggcg gcaggtcttc ccgaggcccc gcattctcgc acgcttcaaa 2700
agcgcacgtc tgcgcgctg ttctcctctt cctcatctcc gggcctttcg acgatccagc 2760
cgccaccatg aaaaagcctg aactcacgcg gacgtctgtc gagaagttc tgatcgaaaa 2820
gttcgacagc gtctccgacc tgatgcagct ctcgaggggc gaagaatctc gtgctttcag 2880
cttcgatgta ggaggcgctg gatatgtcct gccggtaaat agctgcgcgg atggtttcta 2940
caaagatcgt tatgtttatc ggcactttgc atcggcgcgg ctcccgattc cggaagtgtc 3000
tgacattggg gaattcagcg agagcctgac ctattgtcgc tcccgccgtg cacagggtgt 3060
cacgttgcaa gacctgcctg aaaccgaact ccccgctgtt ctgcagccgg tcgaggaggc 3120
catggatgcc atcgctgcgg ccgatcttag ccagacgagc ggggttcggcc cattoggacc 3180
gcaaggaaac ggtcaataca ctacatggcg tgatttcata tgcgcgattg ctgatcccca 3240
tgtgtatcac tggcaaaactg tgatggacga caccgtcagt gcgtccgtcg cgcaggctct 3300
cgatgagctg atgctttggg ccgaggactg ccccgaaagtc cggcacctcg tgcacgcgga 3360
tttcggctcc aacaatgtcc tgacggacaa tggccgcata acagcggta ttgactggag 3420
cgaggcgatg ttccggggatt cccaatacga ggtcgccaac atcttcttct ggaggccgtg 3480
gttggcttgt attggagcagc agacgcgcta cttcgagcgg aggcattccg agottgcagg 3540
atcgccgogg ctccgggctg atatgctccg cattgggtctt gaccaactct atcagagctt 3600
ggttgacggc aatttcgatg atgcagcttg ggcgcagggt cgatgcgacg caatcgctccg 3660
atccggagcc gggactgtcg ggcgtacaca aatcgocgcg agaagcgogg ccgtctggag 3720
cgatggctgt gtagaagtac tcgccgatag tggaaaccga cgcccagca ctcgctccgag 3780
ggcaaaggaa tagtcgatgc agaaattgat gatctattaa acaataaaga tgtccactaa 3840
aatggaagtt ttccctgtca tactttgtta agaagggtga gaacagagta ctacatttt 3900
gaatggaagg attggagcta cgggggtggg ggtgggggtg gattagataa atgcctgctc 3960
tttactgaag gctctttact attgctttat gataatgttt oatagttgga tatcataatt 4020
taaacaagca aaaccaaatt aaggggocagc tcattctctc cactcatgat ctatagatct 4080
atagatctct cgtgggatca ttgtttttct cttgattccc actttgtggg tctaagtact 4140
gtggtttcca aatgtgtcag ttctcatagcc tgaagaacga gatcagcagc ctctgttcca 4200
catacacttc attctcagta ttgttttgcc aagttctaat tccatcagaa gctgactcta 4260
gatcctgcag gaattcatat gaagttccta tactttctag agaataaggaa cttcggaata 4320
ggaacttcaa aatgtcgogg cgcgcgggta accgaagttc ctatactttc tagagaatag 4380
gaacttcgga ataggaact caagcttaag cgc 4413

<210> 4

<211> 14947

<212> DNA

<213> Artificial Sequence

<220>

WO 2004/035782

PCT/EP2003/011233

8/39

<223> Description of Artificial Sequence: Targeting
vector for Rosa26 locus with a Fluc-hygro insert

<400> 4

ctagggataa	cagggtaata	tagccgcggc	aggccctccg	agcgtggtgg	agccgtttctg	60
tgagacagcc	gggtacgagt	cgtgacgctg	gaaggggcaa	gcgggtggtg	ggcaggaatg	120
cggtcgcgcc	tgacgaacc	ggagggggag	ggagaaggga	gcggaaaagt	ctccaccgga	180
cgcgcccatg	gctcgggggg	gggggggag	cggaggagcg	cttcggcgcc	acgtctcgtc	240
gctgattggc	ttcttttctt	cccgcctgtg	gtgaaaacac	aaatggcggtg	ttttggttgg	300
cgtaaggcgc	ctgtcagtta	acggcagccg	gagtgcgcag	ccgcccgcag	cctcgtctctg	360
cccactgggt	ggggcgggag	gtaggtgggg	tgaggcgagc	tggacgtgog	ggcgcggtcg	420
gcctctggcg	gggcggggga	ggggaggag	ggtcagcgaa	agtagctcgc	gcgcgagctc	480
cegccacccc	tcccttctct	ctgggggagt	ggttttacc	gccgcgggcc	gggcctcgtc	540
gtctgattgg	ctctcggggc	ccagaaaact	ggcccttgc	attggtcgtg	gttcgtgcaa	600
gttgagtcca	tccgcgggcc	agcggggggc	gcgaggaggc	gctcccaggt	tccggccctc	660
ccctcggccc	cgcgcgcgag	agtctggccg	cgcgcgccctg	cgcaacgtgg	caggaagcgc	720
gcgctggggg	cggggacggg	cagtagggct	gagcggtctg	ggggcggggtg	caagcacgtt	780
tccgacttga	gttgocctca	gagggggcgtg	ctgagccaga	cctccatcgc	gcactccggg	840
gagtgagggg	aaggagcgag	ggctcagttg	ggctgttttg	gaggcaggaa	gcacttgctg	900
tcccagaagtc	gctctgagtt	gttatcagta	aggggagctg	agtggagtag	gcggggagaa	960
ggccgcaccc	ttctcgggag	gggggagggg	agtgttgcaa	tacctttctg	ggagttctct	1020
gctgcctcct	ggcttctgag	gaccgcccctg	ggcctgggag	aatcccttcc	ccctcttccc	1080
tcgtgatctg	caactccagt	ctttctaggt	aaccgatatc	cctgcagggg	tgacctgcac	1140
gtctagggcg	cagtagtcca	gggtttcctt	gatgatgtca	tacttatcct	gtcccttttt	1200
tttccacagc	tgcggttga	ggacaaactc	ttcgcggtct	ttccagtact	cctgcaggtg	1260
actgactgag	tgcgatctg	cgatctaagt	aagcttgcca	ttccgggtact	gttggttaaag	1320
ccaccatgga	agacgccaaa	aacataaaga	aaggcccggc	gccattctat	ccgctggaag	1380
atggaaccgc	tggagagcaa	ctgcataaag	ctatgaagag	atacgccctg	gttctctgaa	1440
caattgtttt	tacagatgca	catatcgagg	tggacatcac	ttacgctgag	tacttcgaaa	1500
tgtccgttcg	gttggcagaa	gctatgaaac	gatatgggct	gaatacaaat	cacagaatcg	1560
tcgtatgcag	tgaactctct	cttcaattct	ttatgccggt	gttgggcgcg	ttatattatcg	1620
gagttgcagt	tgcgcccgcg	aacgcacatt	ataatgaacg	tgaattgctc	aacagtatgg	1680
gcattttcgca	gcctaccgtg	gtgttcgttt	ccaaaagggg	gttgcaaaaa	atthtgaacg	1740
tgcaaaaaaa	gtcccaaatc	atccaaaaaa	ttattatcat	ggattctaaa	acggattacc	1800
agggatttca	gtcgatgtac	acgttcgtca	catctcatct	acctcccggt	tttaattgaat	1860
acgattttgt	gccagagtcc	ttcgataggg	acaagacaat	tgcaactgatc	atgaactcct	1920
ctggatctac	tgggtctgct	aaaggtgtcg	ctctgcctca	tagaactgcc	tgcgtgagat	1980
tctcgcatgc	cagagatcct	atthttggca	atcaaatcat	tccggatact	gcgattttaa	2040
gtgttggtcc	attccatcac	ggttttggaa	tgtttactac	actcggatat	ttgatattgtg	2100
gatttcgagt	cgtottaatg	tatagatttg	aagaagagct	gtttctgagg	agccttcagg	2160
attacaagat	tcaaagtgcg	ctgctgggtc	caaccctatt	ctccttcttc	gccaaaagca	2220
ctctgatgga	caaatacgat	ttatctaatt	tacacgaat	tgcctctggg	ggcgctcccc	2280
tctctaagga	agtcggggaa	gcgggttgcca	agaggttcca	tctgccaggt	atcaggcaag	2340
gatatgggct	cactgagact	acatcagcta	ttctgattac	acccgagggg	gatgataaac	2400
cgggcgcggt	cggtaaaagt	gttccatttt	ttgaagcgaa	gggtgtggat	ctggataacc	2460
ggaaaacgct	gggcgttaat	caaagaggcg	aactgtgtgt	gagaggtcct	atgattatgt	2520
ccggttatgt	aaacaatccg	gaagcgacca	acgccttgat	tgacaaggat	ggatggctac	2580
attctggaga	catagcttac	tgggacgaag	acgaacactt	cttcacgtgt	gaccgcctga	2640
agtcctctgat	taagtacaaa	ggctatcagg	tggctcccgc	tgaattggaa	tccatcttgc	2700
tccaacaccc	caacatcttc	gacgcaggtg	tcgcaggtct	tcccgcagat	gacgcgggtg	2760
aacttcccgc	cgcggttgtt	gttttggagc	acggaaagac	gatgacggaa	aaagagatcg	2820
tggattacgt	cgccagtcaa	gtaacaaccg	cgaaaaagtt	gcgcggagga	gttgtgtttg	2880
tggacgaagt	accgaaaggt	cttacccgaa	aactcgacgc	aagaaaaatc	agagagatcc	2940
tcataaaggc	caagaagggc	ggaaagatcg	ccgtgttaatt	ctagaccggt	tcgagatcca	3000
ggcgcggtac	ataaaaagat	cattattttc	aatagatctg	tgtgttggtt	ttttgtgtgc	3060
cttgggggag	ggggaggcca	gaatgaggcg	cggccaaggg	ggagggggag	gccagaatga	3120
ccttggggga	ggggagggcc	agaatgacct	tgggggaggg	ggaggccaga	atgagcgcg	3180
ccccgatcc	gtcgagccc	taaggccata	gcggccgccc	tgaggccgcg	ggcgatcgcc	3240
taggggtaac	cgaagtctct	atactttcta	gagaatagga	acttcggaat	aggaacttct	3300
tataatctag	aagatctgga	tccacgattc	gagggcccct	gcaggtcaat	tctaccgggt	3360
aggggaggcg	cttttcccaa	ggcagctctg	agcatgcgct	ttagcagccc	cgtggcact	3420
tggcgctaca	caagtggcct	ctggcctcgc	acacattcca	catccaccgg	tagcgccaac	3480
cggctccgtt	ctttggtggc	cccttcgcgc	caccttctac	tcctccccta	gtcagggaagt	3540

WO 2004/035782

PCT/EP2003/011233

9/39

tccccccgc cccgcagctc gcgtcgtgca ggacgtgaca aatggaagta gcacgtctca 3600
ctagtctcgt gcagatggac agcaccgctg agcaatggaa gcgggtaggc ctttggggca 3660
gcggccaata gcagctttgc tcttctcgtt tctgggctca gaggctggga aggggtgggt 3720
ccggggggcg gctcaggggc gggctcaggg gcggggcggg cgcgaaggtc cteccgaggc 3780
ccggcattct cgcacgcttc aaaagcgcac gtctgcccgc ctgttctcct cttcctcatc 3840
tccgggcctt tcgacgatcc agccgccacc atgaaaaagc ctgaactcac cgcgacgtct 3900
gtcgagaagt ttctgatcga aaagtctgcac agcgtctccg acctgatgca gctctcggag 3960
ggcgaagaat ctctgtcttt cagcttcgat gtaggagggc gtggatatgt cctgcgggta 4020
aatagctcgc ccgatggttt ctacaaagat cgttatgttt atcggcactt tgcacggcc 4080
gcgctccgga ttcgggaagt gcttgacatt ggggaattca gcgagagcct gacctattgc 4140
atctcccgcc gtgcacaggg tgtcacgttg caagacctgc ctgaaaccga actgcccgt 4200
gttctgcagc cggctcgcgga ggccatggat gccatcgctg cggccgatct tagccagacg 4260
agcgggttcg gcccatctcg accgcaagga atcgggtcaat acactacatg gcgtgatttc 4320
atatgcgcga ttgctgatcc coatgtgtat cactggcaaa ctgtgatgga cgacaccgtc 4380
agtgcgtccg tcgcgcaggg tctcgatgag ctgatgcttt gggccgagga ctgccccgaa 4440
gtcgggcacc tcgtgcacgc ggattctggc tccaacaatg tcotgacgga caatggccgc 4500
ataacagcgg tcattgacg gagcggggc atgttccggg attcccaata cgaggctgcc 4560
aacatcttct tctggaggcc gtggttggtt aagtggagc agcagacgcg ctacttcgag 4620
cggaggcatc cggagcttgc aggatcgccg cggctccggg cgtatatgct cggcattggg 4680
cttgaccaac tctatcagag cttgggtgac ggcaatttcg atgatgcagc ttgggcgcag 4740
ggtcgatgcg acgcaatcgt ccgatccgga gccgggactg tcgggcgtac acaaatcgcc 4800
cgcagaagcg cggccgtctg gaccgatggc tgtgtagaag tactcgccga tagtggaac 4860
cgacgcccc aactcgtcc gagggcaaa gaaatagtcga tgcagaaatt gatgatctat 4920
taaacataa agatgtccac taaaatggaa gtttttctcgc tcatctttg ttaagaaggg 4980
tgagaacaga gtacctacat ttgaaatgga aggatggag ctaogggggg gggggtgggt 5040
tgggattaga taaatgctg ctctttactg aaggctcttt actattgctt tatgataag 5100
tttcatagtt ggatatcata atttaaacaa gcaaaaacca attaagggcc agctcattcc 5160
tcccactcat gatctataga tctatagatc tctcgtggga tcattgtttt tctcttgatt 5220
cccactttgt ggttctaaat actgtgggtt ccaaattgtt cagtttcata gcctgaagaa 5280
cgagatcagc agcctctgtt ccaatacac ttcattctca cagaattca tatgaagttc ctatactttc 5340
aattccatca gaagctgact ctgatccctg caaaatgtcg cggcgogcgg gtaaccgaag 5400
tagagaatag gaacttcgga ataggaactc ggaataggaa ctcoaagctt aagcgctaga 5460
ttcctatact ttotagagaa taggaacttc aaggotaacc tgggtgtgtg gcgttgtcct 5520
agatgggccc gagtattctg ggcaggctta aaggotaacc tgggtgtgtg gcgttgtcct 5580
gcaggggaat tgaacaggtg taaaattgga gggacaagac ttcccacaga ttttcgggtt 5640
tgtcgggaag ttttttaata ggggcaata aggaaaatgg gaggataggg agtcatctgg 5700
ggttttatgc agcaaaaacta caggttatta ttgcttgtga tccgcctcgg agtattttcc 5760
atcgaggtag attaaagaca tgcctacccg agtttttatac tctcctgctt gagatcctta 5820
ctacagtatg aaattacagt gtcgcgagtt agcatatgta agcagaattt taatcatttt 5880
taaagagccc agtacttcat atccatttct cccgtcctt ctgcagcctt atcaaaaggt 5940
attttagaac actcatttta gcccattttt catttattat actggcttat ccaaccctta 6000
gacagagcat tggcattttc cctttcctga tcttagaagt ctgatgactc atgaaaccag 6060
acagattagt tacatacacc acaaatcgag gctgtagctg gggcctcaac actgcagttc 6120
ttttataact ccttagtaca ctttttggtg atcctttgcc ttgatcctta attttcagtg 6180
tctatcacct ctcccgteag tgggtgttcca catttgggcc tattctcagt ccaggggagt 6240
ttacaacaat agatgtattg agaatccaac cttaaagctta actttocact cccatgaatg 6300
octctctcct ttttctccat ttataaaactg agctattaac cattaatggg tcagggtgga 6360
tgtctcctcc ccatattacc tgatgtatct tacatattgc caggctgata ttttaagaca 6420
ttaaaaggta tatttcatta ttgagccaca tgggtattgat tactgcttac taaaattttg 6480
tcattgtaca catctgtaaa aggtgggtcc ttttggaatg caaagttcag gtgtttgttg 6540
tctttcctga cctaagggtc tgtgagcttg tattttttct atttaagcag tgotttctct 6600
tggactggct tgactcatgg cattctacac gttattgctg gtctaaatgt gattttgcca 6660
agcttcttca ggacctataa ttttgcttga cttgtagcca aacacaagta aatgattaa 6720
gcaacaaatg tatttgtgaa gcttggtttt taggttggtg tgttgtgtgt gcttgtgtc 6780
tataataata ctatccaggg gctggagagg ttccagagca ttcaagagca cagactgtct 6840
ttccagaagt cctgagttca attcccagca accacatggg ggctcacaac catctgtaat 6900
gggatctgat gccctcttct ggtgtgtctg aagaccacaa gtgtattcac attaaataaa 6960
taaattcctc ttcttcttct tttttttttt tttaaagaga atactgtctc cagtagaatt 7020
tactgaagta atgaaatact ttgtgtttgt tccaatatgg tagccaataa tcaaattact 7080
ctttaagcac tggaaatgtt accaaggaac taatttttat ttgaagtgt actgtggaca 7140
gaggagccat aactgcagac ttgtgggata cagaagacca atgcagactt taatgtcttt 7200
tctcttacac taagcaataa agaaataaaa attgaacttc tagtatccta tttgtttaaa 7260
ctgctagctt tacttaactt ttgtgcttca tctatacaaa gctgaaagct aagtctgcag 7320

WO 2004/035782

PCT/EP2003/011233

10/39

ccattactaa	acatgaaage	aagtaatat	aatttttggat	ttcaaaaatg	tagggccaga	7380
gtttagccag	ccagtgggtg	tgcttgccct	tatgccttta	atcccagcac	tctggaggca	7440
gagacaggca	gatctctgag	tttgagccca	gcctgggtcta	cacatcaagt	tctatctagg	7500
atagccagga	atacacacag	aaacctgtt	ggggaggggg	gctctgagat	ttcataaaat	7560
tataattgaa	gcattcccta	atgagccact	atggatgtgg	ctaaatccgt	ctacctttct	7620
gatgagattt	gggtattatt	ttttctgtct	ctgctgttgg	ttgggtcttt	tgacactgtg	7680
ggctttcttt	aaagcctcct	tcctgccatg	tggtctcttg	tttgctacta	acttcccatg	7740
gcttaaatgg	catggctttt	tgccttctaa	gggcagctgc	tgagatttgc	agcctgattt	7800
ccagggtggg	gttgggaaat	ctttcaaaaca	ctaaaattgt	cctttaattt	tttttttaaa	7860
aaatgggtta	tataataaac	ctcataaaat	agttatgagg	agtggagggtg	actaatatta	7920
aatgagctcc	tccctataaa	aagagctatt	aaggcttttt	gtcttatact	taactttttt	7980
tttaaatgtg	gtatctttag	aaccaagggt	cttagagttt	tagtatacag	aaactgttgc	8040
atcgcttaat	cagattttct	agtttcaaat	ccagagaatc	caaattcttc	acagccaaag	8100
tcaaatgaag	aatttctgac	ttttaatgtt	aatttgctta	ctgtgaatat	aaaaatgata	8160
gcttttctctg	aggcagggtc	tcactatgta	tctctgcctg	atctgcaaca	agatatgtag	8220
actaaagtct	tgcttgcttt	tgtctcctga	atactaaggt	taaaatgtag	taatactttt	8280
ggaacttgca	ggtcagattc	ttttataggg	gacacactaa	gggagcttgg	gtgatagtgt	8340
gtaaaatgtg	tttcaagtga	tgaaaacttg	aattattatc	accgcaacct	acttttttaa	8400
aaaaaaagcc	aggcctgtta	gagcatgctt	aagggatccc	taggacttgc	tgagcacaca	8460
agagtagtta	cttggcaggc	tcctgggtgag	agcatatttc	aaaaaacaag	gcagacaacc	8520
aagaaactac	agttaagggtt	acctgtcttt	aaaccatctg	catatacaca	gggatattaa	8580
aatattccaa	ataatatttc	attcaagttt	tcccccatca	aattgggaca	tggaatttct	8640
cggtgaatag	gcagagttgg	aaactaaaca	aatggttggtt	ttgtgatttg	tgaaattgtt	8700
ttcaagtgat	agttaaagcc	catgagatac	agaacaaagc	tgctatttctg	aggtctcttg	8760
gtttatactc	agaagcactt	ctttgggttt	ccctgcacta	tcctgatcat	gtgetaggcc	8820
taccttaggc	tgattgttgt	tcaaataaac	ttaaagtctc	tgtcagggtga	tgtcatatga	8880
tttcatatat	caaggcaaaa	catgttatat	atgtttaaaca	tttgtactta	atgtgaaagt	8940
taggtctttg	tggttttgat	ttttaatttt	caaaacctga	gctaaataag	tcattttttac	9000
atgtcttaca	tttggtggaa	ttgtataatt	gtggtttgca	ggcaagactc	tctgacctag	9060
taaccttacc	tatagagcac	tttgotgggt	cacaagtcta	ggagtcaagc	atttcacctt	9120
gaagtggaga	cgttttgtta	gtgtatacta	gtttatatgt	tggaggacat	gtttatccag	9180
aagatattca	ggactatttt	tgactgggct	aaggaattga	ttctgattag	cactgttagt	9240
gagcattgag	tggtcatttg	gcttgaattg	gagtcacttg	tatatctcaa	ataatgctgg	9300
ccttttttaa	aaagcccttg	ttctttatca	cctgttttcc	tacataaatt	ttgttcaag	9360
aaataactgt	ttggatctcc	ttttgacaa	aatagoatgt	tttcaagcca	tatttttttt	9420
cctttttttt	tttttttttg	gtttttcgag	acagggtttc	tctgtatagc	cctggctgtc	9480
ctggaactca	ctttgtagac	caggctggcc	tcgaactcag	aaatccgcct	gcctctgcct	9540
cctgagtgcc	gggattaaag	gcgtgcacca	ccacgcctgg	ctaagttgga	tattttgtta	9600
tataactata	accaatacta	actccactgg	gtggattttt	aattcagtc	gtagtcttaa	9660
gtggtcttta	ttggcccttc	attaaaatct	actgttctact	ctaacagagg	ctgttggtac	9720
tagtggcact	taaggcaact	cctacggata	tactagocga	ttaagggtca	gggagtgaaa	9780
ctagtctagc	gtttttgtata	cctaccagct	ttatactacc	ttgttctgat	agaaatattt	9840
caggacatct	agcacgtgtt	aactcgagct	gcaggattcg	agggcccgcg	caggtcaatt	9900
ctaccgggta	ggggaggcgc	ttttcccaag	gcagtctgga	gcattgcgct	tagcagcccc	9960
gctgggcact	tggtcgctaca	caagtggcct	ctggcctcgc	acacattcca	catccaccgg	10020
taggcgccaa	ccggctccgt	tctttgggtg	cccttcgcgc	ccaccttcta	ctcctccctt	10080
agtcaggaa	ttcccccccg	ccccgcagct	cgcgtcgtgc	aggacgtgac	aaatggaaat	10140
agcacgtctc	actagtctcg	tgcagatgga	cagcacccgt	gagcaatgga	agcgggtagg	10200
cctttggggc	agcggccaat	agcagctttg	ctccttcgct	ttctgggctc	agaggtctgg	10260
aaggggtggg	tcggggggcg	ggctcagggg	cgggctcagg	ggcggggcgg	gcgcccgaag	10320
gtcctccgga	ggcccggcat	tctgcacgct	tcaaaagcgc	acgtctgcgc	cgctgttctc	10380
ctcttcctca	tctccgggcc	tttgcacctg	cagccaatgc	accgtccttg	ccatcatggc	10440
ctcgtacccc	ggccatcaac	acgcgtctgc	gttcgaccag	gctgcgcggt	ctcgcggcca	10500
tagcaaccga	cgtacggcgt	tgogccctcg	ccggcagcaa	gaagccacgg	aagtccgccc	10560
ggagcagaaa	atgcacacgc	tactgcgggt	ttatatagac	ggtccccacg	ggatggggaa	10620
aaccaccacc	acgcaactgc	tggtggccct	gggttcgcgc	gacgatctcg	tctacgtacc	10680
cgagccgatg	acttactggc	gggtgctggg	ggcttcogag	acaatcgcca	acatctacac	10740
cacacaacac	cgcctcgacc	agggtagat	atcgcccggg	gacgcggcgg	tggtaatgac	10800
aagcgcocag	ataacaatgg	gcattgcotta	tgccgtgacc	gacgcgcgtt	tggtctctca	10860
tatcgggggg	gaggctggga	gctcacatgc	ccgcgccccg	gccctcacc	tcatcttcga	10920
ccgccatccc	atcgccgccc	tcctgtgcta	ccggcccgcg	cggtaacctta	tgggcagcat	10980
gacccccag	gcgtgctgg	cgttcgtggc	cctcatcccc	ccgaccttgc	ccggcaccac	11040
catcgtgctt	ggggcccttc	cggaggacag	acacatcgac	cgcctggcca	aacgccagcg	11100

WO 2004/035782

PCT/EP2003/011233

11/39

ccccggcgag	cggetggacc	tggctatgct	ggctgagatt	cgccgcgttt	acgggctact	11160
tgccaatacg	gtgcgggtatc	tgcagtgcgg	cggtgcgtgg	cgaggaggact	ggggacagct	11220
ttcggggacg	gccgtgccgc	cccagggtgc	cgagccccag	agcaacgcgg	gcccacgacc	11280
ccatatcggg	gacacgttat	ttacocgtgt	tccggccccc	gagttgctgg	cccccaacgg	11340
cgacctgtat	aacgtgtttg	cotgggcctt	ggacgtcttg	gccaacgcgc	tccgttccat	11400
gcacgtcttt	atcctggatt	acgaaccaatc	gcccgcgggc	tgccgggacg	ccctgctgca	11460
acttacctcc	gggatgggtcc	agaccoacgt	caccaccccc	ggctccatac	cgacgatatg	11520
cgacctggcg	cgacgttttg	cccggggagat	gggggaggct	aactgagggg	atcgatccgt	11580
cctgtaagtc	tcagaaatt	gatgatctat	taaacaataa	agatgtccac	taaaatggaa	11640
gtttttcctg	tcatactttg	ttaagaaggg	tgagaacaga	gtacctacat	tttgaatgga	11700
aggattggag	ctacgggggt	gggggtgggg	tgggattaga	taaattgcctg	ctctttactg	11760
aaggctcttt	actattgctt	tatgataatg	tttcatagtt	ggatatcata	atttaaacia	11820
gcaaaaccaa	attaagggcc	agctcattcc	tcccactcat	gatctataga	tctatagatc	11880
tctcgtggga	tcattgtttt	tctcttgatt	cccactttgt	ggttctaagt	actgtggttt	11940
ccaaatgtgt	cagtttcata	gcctgaagaa	cgagatcagc	agcctctgtt	ccacatacac	12000
ttcattctca	gtattgtttt	gccaaagtct	aattccatca	gaagctgact	ctaggccgag	12060
ctccaattcg	ccctatagtg	agtcgtatta	caattcactg	gccgtogttt	tacaacgtcg	12120
tgactgggaa	aaccctggcg	ttaccaact	taatgcctt	gcagcaocat	cccctttcgc	12180
cagctggcgt	aatagcgaag	aggcccgac	cgatcgccct	tcccaacagt	tgccgcagct	12240
gaatggcgaa	tgggacgcgc	cctgtagcgg	cgcattaagc	gcggcgggtg	tgggtggttac	12300
gcgcagcgtg	acogctacac	ttgccagcgc	cctagcggcc	gctcctttcg	ctttcttccc	12360
ttcctttctc	gccacgttcg	ccggttttcc	cogtcaagct	ctaaatcggg	ggctoccttt	12420
agggttccga	tttagtgctt	tacggcacct	cgaccccaaa	aaacttgatt	aggggtgatg	12480
ttcacgtagt	gggccatcgc	cctgatagac	ggtttttctc	cctttgacgt	tggagtccac	12540
gttctttaat	agtggaactc	tgttccaaac	tggaaacaaca	ctcaacccta	tctcgggtcta	12600
ttcttttgat	ttataaggga	ttttgccgat	ttcgocctat	tggttaaaaa	atgagctgat	12660
ttaacaaaaa	tttaacgcga	attttaacaa	aataattaacg	cttacaattt	aggtggcact	12720
tttcggggaa	atgtgcgcgg	aacccttatt	tgtttatttt	tctaaataca	ttcaaataatg	12780
ratccgctca	tgagacaata	accctgataa	atgottcaat	aatattgaaa	aaggaagagt	12840
atgagtattc	aacatttccg	tgtcgccctt	attccctttt	ttgcggcatt	ttgccttcc	12900
gtttttgttc	accgagaac	gctgggtgaa	gtaaaagatg	ctgaagatca	gttgggtgca	12960
cgagtgggtt	acatcgaact	ggatctcaac	agcggttaaga	tccttgagag	ttttgcoccc	13020
gaagaacgtt	ttccaatgat	gagcactttt	aaagttctgc	tatgtggcgc	ggtattatcc	13080
cgtattgacg	cogggcaaga	gcaactcgg	cgccgcatac	actatttctca	gaatgacttg	13140
gttgagtact	caccagtcac	agaaaagcat	cttacggatg	gcatgacagt	aagagaatta	13200
tgacgtgctg	ccataaccat	gagtgataac	actgcggcca	acttacttct	gacaacgato	13260
ggaggaccga	aggagctaac	cgtttttttg	cacaacatgg	gggatcatgt	aactcgcctt	13320
gatcgttggg	aaccggagct	gaatgaagcc	ataccaaacg	acgagcgtga	caccacgatg	13380
cctgtagcaa	tggcaacaac	tggtgcgaac	ctattaaactg	gcgaactact	tactotaget	13440
tcccggaac	aattaataga	ctggatggag	gcggataaag	ttgcaggacc	actttctgctc	13500
tccggccctc	cggttggtg	gtttattgct	gataaatctg	gagccgggtga	cgttgggtct	13560
cgcggtatca	ttgcagcact	ggggccagat	ggttaagccct	cccgtatcgt	agttatctac	13620
acgacgggga	gtcaggcaac	tatggatgaa	cgaaatagac	agatcgctga	gataggtgcc	13680
tcactgatta	agcattggta	actgtcagac	caagtttact	catatatact	ttagattgat	13740
ttaaaacttc	attttttaatt	taaaaggatc	taggtgaaga	tccttttttga	taatctcatg	13800
accaaaatcc	cttaacgtga	gttttcgttc	cactgagcgt	cagaccccg	agaaaagatc	13860
aaaggatott	cttgagatcc	tttttttctg	cgcgtaactc	gctgcttgca	aacaaaaaaa	13920
ccaccgctac	cagcgggtgt	ttgtttgccg	gatcaagagc	taccaactct	ttttccgaag	13980
gtaactggct	tcagcagagc	gcagatacca	aatactgtcc	ttctagtgtg	gocgtagtta	14040
ggccaccact	tcaagaactc	tgtagcaccg	cctacatacc	tcgctctgct	aatcctgtta	14100
ccagtggctg	ctgccagtg	cgataagtcg	tgtcttaccg	ggttggactc	aagacgatag	14160
ttaccggata	aggcgcagcg	gtcgggctga	acggggggtt	cgtgcacaca	gcccagcttg	14220
gagcgaacga	cctacacoga	actgagatac	ctacagcgtg	agctatgaga	aagcgcacg	14280
cttcccgaag	ggagaaaggc	ggacaggtat	ccggttaagcg	gcagggtcgg	aacaggagag	14340
cgcacgaggg	agcttccagg	gggaaacgco	tggtatcttt	atagtcctgt	cgggtttcgc	14400
cacctctgac	ttgagcgtcg	atttttgtga	tgctcgtcag	gggggcggag	cctatggaaa	14460
aacgccagca	acgcggcctt	tttacgggtt	ctggcctttt	gctggccttt	tgetcacatg	14520
ttctttctcg	cgttatcccc	tgattctgtg	gataaccgta	ttaccgcctt	tgagttagct	14580
gataccgctc	gccgcagccc	aacgaccgag	cgcagcgagt	cagttagcga	ggaagcggaa	14640
gagcgcceaa	tacgcaaacc	gcctctcccc	gcgcgttgcc	cgattcatta	atgcagctgg	14700
cagcacaggt	ttcccgactg	gaaagcgggc	agttagcgca	acgcaattaa	tgtgagttag	14760
ctcactcatt	aggeacccca	ggctttacac	tttatgcttc	cggtcgtat	gttgtgtgga	14820
attgtgagcg	gataacaatt	tcacacagga	aacagctatg	accatgatta	cgccaagcgc	14880

WO 2004/035782

PCT/EP2003/011233

12/39

gcaattaacc ctcactaaag ggaacaaaag ctgtcgagat ctagatatcg atggccatag 14940
agttacg 14947

<210> 5

<211> 4665

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Sequence of
Rluc-H1-shRNA neo insert

<400> 5

tctaggtaac	cgatatccct	gcaggggtga	cctgcacgtc	tagggcgag	tagtccaggg	60
tttccttgat	gatgtcatac	ttatcctgtc	ccacagctcg	cggttgagga		120
caaactcttc	goggtctttc	cagtactcct	gcaggtgact	gactgagtcg	agatctgcga	180
tctaagtaag	cttggcattc	cggtactgtt	ggtaaagcca	ccatggcttc	caaggtgtac	240
gaocccgagc	aacgcaaacg	catgatcact	gggcctcagt	ggtgggctcg	ctgcaagcaa	300
atgaacgtgc	tggactcctt	catcaactac	tatgattccg	agaagcacgc	cgagaacgcc	360
gtgatttttc	tgcattggtaa	cgctgcctcc	agctacctgt	ggaggcacgt	cgtgcctcac	420
atcgagcccg	tggctagatg	catcatccct	gatctgatcg	gaatgggtaa	gtccggcaag	480
agcgggaatg	gctcatatcg	cctcctggat	cactacaagt	acctcaccgc	ttggttcgag	540
ctgctgaacc	ttccaaagaa	aatcatcttt	gtgggcccag	actggggggc	ttgtctggcc	600
tttcactact	cctacgagca	ccaagacaag	atcaaggcca	tcgtccatgc	tgagagtgtc	660
gtggacgtga	tcgagtcccg	ggacgagtgg	cctgacatcg	aggaggatat	cgccctgacg	720
aagagcgaag	agggcgagaa	aatggtgctt	gagaataact	tcctcgtcga	gacctgctc	780
ccaagcaaga	tcattgoggaa	actggagcct	gaggagtctg	ctgcctacct	ggagccatte	840
aaggagaagg	gcgaggttag	acggcctacc	ctctcctggc	ctcgcgagat	ccctctcggt	900
aagggaggca	agcccgacgt	cgccacagatt	gtccgcaact	acaacgccta	ccttcggggc	960
agcgacgatc	tgcctaagat	gttcacatcg	tcggaccctg	ggttcttttc	caacgctatt	1020
gtcgaggag	ctaagaagtt	ccctaaccac	gagttcgtga	aggtgaaggg	cctccacttc	1080
agccaggagg	acgctccaga	tgaaatgggt	aagtacatca	agagccttcgt	ggagcgcgtg	1140
ctgaagaacg	agcagtaatt	ctagaccggt	tcgagatcca	ggcgcggtac	aataaaagat	1200
cattatatttc	aatagatctg	tgtgttggtt	ttttgtgtgc	cttggggggag	ggggaggcca	1260
gaatgaggcg	cggccaaggg	ggaggggggag	gccagaatga	ccttggggga	gggggaggcc	1320
agaatgacct	tgggggaggg	ggaggccaga	atgaggcgcg	gatccgtcga	cttaattaag	1380
gocagggatc	ttcaagcaga	cctacagcaa	gttcgacaca	aactcacaca	acgatgacgc	1440
actactcaag	aactacgggc	tgctctactg	cctcaggaag	gacatggaca	aggtcgagac	1500
attcctgcgc	atcgtgcagt	gcccgtctgt	ggagggcagc	tgtggcttct	agctgcccgg	1560
gtggcatccc	tgtgacccct	ccccagtgc	tctcctggcc	ctggaagttg	ccactccagt	1620
gcccaccagc	cttgtcctaa	taaaatttag	ttgcatcatt	ttgtctgact	aggtgtcctt	1680
ctataatatt	atgggggtga	gggggggtgt	atggagcaag	gggcaagttg	ggaagacaac	1740
ctgtaggggc	tgcggggctc	attgggaacc	aagctggagt	gcagtggcac	aatcttggct	1800
cactgcaatc	tcgcctcct	gggttcaagc	gattctcctg	cctcagcctc	ccgagttgtt	1860
gggattccag	gcattgcatga	ccaggctcag	ctaatttttg	tttttttggt	agagacgggg	1920
tttcaccata	ttggccaggc	tggctcccaa	ctcctaactc	caggtgatct	accacacttg	1980
gcctcccaaa	ttgctgggat	tacaggcggt	aaccactgct	cccttcctcg	tccttctgat	2040
tttaaaataa	ctataccagc	aggaggacgt	ccagacacag	cataggetac	ctggccatgc	2100
ccaaccgggtg	ggacatttga	gttgcttgct	tggcactgtc	ctctcatgcg	ttgggtccac	2160
tcagtagatg	cctgttgaat	taagcttatt	taaataggcc	ggccataact	tcgtataatg	2220
tatgctatac	gaagttatgg	atcctcacag	taggtggcat	cgttcctttc	tgactgcccg	2280
ccccccgcac	gocgtcccgc	gatattgagc	tcgaaacctc	tcgcccctgc	gcccgcgggtg	2340
ctccgtccgc	gcccgtccgc	catggaattc	gaacgctgac	gtcatcaacc	cgctccaagg	2400
aatecggggc	ccagtgctac	taggcgggaa	caccagcgc	gcgtgcgccc	tggcaggaa	2460
atggctgtga	gggacagggg	agtggcgccc	tgcaatattt	gcatgtcgct	atgtgtctg	2520
ggaaatcacc	ataaacgtga	aatgtctttg	gatttgggaa	tcttataagt	tctgtatgag	2580
accactcttt	cccaggattc	caattcagcg	ggagccacct	gatgaagctt	gatcgggttg	2640
ctctcgctga	gttggaatcc	atttttttct	agactcgaga	taacttcgta	taatgtatgc	2700
tatacgaagt	tatggcgcg	cggtaaccga	agttcctata	ctttctagag	aataggaa	2760
tcggaatagg	aacttcttag	gtcaattcta	ccgggtaggg	gaggcgcttt	tcccaggcca	2820
gtctggagca	tgcgcttag	cagcccccgt	gggcacttgg	cgctacacaa	gtggcctctg	2880
gcctcgacac	cattccacat	ccaccggtag	gcgccaaccg	gctccgttct	ttggtggccc	2940

WO 2004/035782

PCT/EP2003/011233

13/39

```

cttcgcgcc ccttctactc ctcccctagt caggaagttc ccccccgcgc cgcagctcgc 3000
gtcgtgcagg acgtgacaaa tgggaagtagc acgtctcact agtctcgtgc agatggacag 3060
cacgcgtgag caatggaagc gggtaggcct ttggggcagc ggccaatagc agctttgtct 3120
cttcgctttc tgggtcaga ggctgggaag ggggtgggtcc gggggcgggc tcagggcgcg 3180
gtcaggggc ggggcgggcg cccgaaggtc ctccggaggc ccggcattct gcacgcttca 3240
aaagcgcagc tctgccgcgc tgttctcctc ttccctcatct ccgggccttt cgacctgcag 3300
ccaatatggg atcggccatt gaacaagatg gattgcacgc aggttctccg gcegtttggg 3360
tggagaggct attcggtat gactgggcac aacagacaat cggctgctct gatgcgcgcg 3420
tgttccggct gtcagcgcag gggcgcccgg ttctttttgt caagaccgac ctgtccggtg 3480
ccctgaatga actgcaggac gaggcagcgc ggctatcgtg gctggccacg acgggcgttc 3540
cttgccgagc tgtgtcagc gttgtcactg aagcgggaag ggactggctg ctattgggcg 3600
aagtgcggcg gcaggatctc ctgtcatctc accttgetcc tgccgagaaa gtatccatca 3660
tggctgatgc aatgcggcgg ctgcatacgc ttgatccggc tacctgccc ttcgaccacc 3720
aagcgaacaa tcgcacgcag cgagcacgta ctccgatgga agccggtctt gtcgatoagg 3780
atgatctgga cgaagagcat caggggctcg cgccagccga actgttcgcc aggtcagg 3840
cgcgcacgac cgacggcgag gatctcgtcg tgacctatgg cgatgcctgc ttgccgaata 3900
tcattggtgga aaatggccgc ttttctggat tcacgcactg tggccggctg ggtgtggcgg 3960
acgcctatca ggacatagcg ttggctaccc gtgatattgc tgaagagctt ggcggcgaat 4020
gggctgacgg cttcctcgtg ctttacggta tcgcgcctcc cgattcgcag cgcacgcct 4080
tctatcgctc tcttgacgag ttcttctgag gggatcgatc cgctgtaagt ctgcagaaat 4140
tgatgatcta ttaaacata aagatgtcca ctaaaatgga agtttttctt gtcatacttt 4200
gttaagaagg gtgagaacag agtacctaca ttttgaatgg aaggattgga gctacggggg 4260
tgggggtggg gtgggattag ataaatgcct gctctttact gaaggctctt tactattgct 4320
ttatgataat gtttcatagt tggatatcat aatttaaaca agcaaaacca aattaagggc 4380
cagctcatte ctcaccaactc tgatctatag atctatagat ctctcgtggg atcattggtt 4440
ttctcttgat tcccactttg tggttctaag tactgtggtt tccaaatgtg tcagtttcat 4500
agcctgaaga accagatcag cagcctctgt tccacatata cttcattctc agtattgttt 4560
tgccaagttc taattccatc agaagctgac tctagatccc gcgccgaagt tcctatactt 4620
tctagagaat aggaacttcg gaataggaac ttcaagctta agcgc 4665

```

<210> 6

<211> 15199

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Targeting
vector for Rosa26 locus with Rluc-H1-shRNA neo
insert

<400> 6

```

ctagggataa cagggtataa tagccgcggc aggcctctcg agcgtgggtg agccgtttctg 60
tgagacagcc gggtagcagt cgtgacgctg gaaggggcaa gcgggtgggtg ggcagggaatg 120
cggctccgccc tgcagcaacc ggagggggag ggagaaggga gcggaaaagt ctccaccgga 180
cgcggccatg gctcgggggg gggggggcag cggaggagcg cttccggccg acgtctcgtc 240
gctgattggc ttcttttctt cccgcccgtg gtgaaaacac aaatggcgtg ttttgggttg 300
cgtaaggcgc ctgtcagtta acggcagccg gagtgcgcag ccgccggcag cctcgctctg 360
cccactgggt gggcggggag gtagggtggg tgaggcgagc tggacgtgcg ggcggggtcg 420
gcctctggcg gggcggggga ggggaggag ggtcagcgaa agtagctcgc gcgcgagcgg 480
ccgccacccc tccccttctt ctgggggagt cgttttaccc gccgcgggcc gggcctcgtc 540
gtctgattgg ctctcggggc ccagaaaact ggcccttgcc atttggtcgt gttcgtgcaa 600
gttgagtcca tccgcgggcc agcggggggc gcgaggagge gctcccaggt tccggccctc 660
ccctcggccc cgcgcgcgag agtctggccg cgcgcccctg cgcaacgtgg cagggaagcgc 720
cgctcggggg cggggaacgg cagtagggct gagcggctgc gggcggggtg caagcaogtt 780
tccgacttga ttgacctcaa gaggggcggt ctgagccaga cctccatcgc gcaactccggg 840
gagtggaggg aaggagcgag ggtcagttg ggtgttttg gaggcaggaa gcaactgtctc 900
tcccaaagtc gctctgagtt gttatcagta agggagctgc agtggagtag gcggggagaa 960
ggcgcacccc ttctccggag gggggagggg agtgttgcaa tacctttctg ggagttctct 1020
gctgcctcct ggcttctgag gaccgcctg ggccgtggag aatcccttcc cctcttctcc 1080
tcgtgatctg caactccagt ctttctaggt aacogatata cctgcagggg tgacctgcac 1140
gtctagggcg cagtagtcca gggtttctt gatgatgtca tacttatact gtcccttttt 1200
ttccacagc tcgcggttga ggacaaactc ttccgggtct ttccagtaact cctgcagggtg 1260

```

WO 2004/035782

PCT/EP2003/011233

14/39

actgactgag	tcgagatctg	cgatctaagt	aagcttggca	ttccggtact	gttggttaaag	1320
ccaccatggc	ttccaagggtg	tacgaccccg	agcaacgcaa	acgcatgac	actgggcctc	1380
agtgggtggg	tcgctgcaag	caaatagaacg	tgctggactc	cttcatcaac	tactatgatt	1440
ccgagaagca	cgccgagaac	gccgtgattt	ttctgcatgg	taacgctgcc	tcagctacc	1500
tgtggaggca	cgtcgtgcct	cacatcgagc	ccgtggctag	atgcatcatc	cctgactctga	1560
tcggaatggg	taagtccggc	aagagcggga	atggctcata	tcgcctcctg	gatcactaca	1620
agtacctcac	cgcttgggtc	gagctgctga	accttccaaa	gaaaatcatc	tttgtgggcc	1680
acgactgggg	ggcttgtctg	gcctttcact	actcctacga	gcaccaagac	aagatcaagg	1740
ccatcgtcoa	tgctgagagt	gtcgtggacg	tgatcgagtc	ctgggacgag	tggcctgaca	1800
tcgaggagga	tatcgccctg	atcaagagcg	aagaggcgga	gaaaatggtg	cttgagaata	1860
acttcttctg	cgagaccatg	ctcccaagca	agatcatgcg	gaaactggag	cctgaggagt	1920
tcgctgccta	cctggagcoa	ttcaaggaga	agggcgaggt	tagacggcct	accctctcct	1980
ggcctcgcca	gatccctctc	gttaagggag	gcaagccgga	cgctgctccag	attgtccgca	2040
actacaacgc	ctaccttcgg	gccagcgacg	atctgcctaa	gatgttcatc	gagtccgacc	2100
ctgggttctt	ttccaacgct	attgtcgagg	gagctaagaa	gttcctaac	accgagttcg	2160
tgaaggtgaa	gggcctccac	ttcagccagg	aggacgctcc	agatgaaatg	ggtaagtaca	2220
tcaagagctt	cgtggagcgc	gtgctgaaga	acgagcagta	attctagacc	ggttcgagat	2280
ccaggcgccg	atcaataaaa	gatcattatt	ttcaatagat	ctgtgtgttg	gttttttgtg	2340
tcgcttgggg	gagggggagg	ccagaatgag	gcgcggccaa	gggggagggg	gaggccagaa	2400
tgaccttggg	ggagggggag	ccagaaatga	ccttggggga	gggggagggc	agaatgaggc	2460
gcggatocgt	cgacttaatt	aaggccaggg	atcttcaagc	agacctacag	caagttcgac	2520
acaaactcac	acaacgatga	cgcactactc	aagaactacg	ggctgctcta	ctgcttcagg	2580
aaggacatgg	acaaggtcga	gacattcctg	cgcatcgtgc	agtgcgcgtc	tgtggagggg	2640
agctgtggct	tctagctgcc	cggttggcat	ccctgtgacc	cctccccagt	gcctctcctg	2700
gccctggaag	ttgocactcc	agtgcaccac	agccttgtcc	taataaaatt	aagttgcatc	2760
attttgtctg	actaggtgtc	cttctataat	attatggggg	ggaggggggg	ggtatggagc	2820
aaggggcaag	ttgggaagac	aacctgtagg	gctgcggggg	totattggga	accaagctgg	2880
agtgcagtg	cacaatcttg	gctcactgca	atctccgctc	cctgggttca	agcgattctc	2940
ctgcctcagc	ctcccgagtt	gttgggattc	caggcatgca	tgaccaggct	cagctaattt	3000
ttgttttttt	ggttagagacg	gggtttcacc	atattggcca	ggctggtctc	caactcctaa	3060
tctcagggtga	tctaccacac	ttggcctccc	aaattgctgg	gattacaggc	gtgaaccact	3120
gctcccttcc	ctgtccttct	gatttttaaaa	taactatacc	agcaggagga	cgtccagaca	3180
cagcataggg	tacctggcca	tgcccaaccg	gtgggacatt	tgagttgctt	gcttggcact	3240
gtcctctcat	gcgttgggtc	cactcagtag	atgcctgttg	aattaagctt	atttaaatag	3300
gocggccata	acttcgtata	atgtatgcta	tacgaagtta	tggatcctca	cagtaggtgg	3360
catcgttctt	ttctgaactgc	ccgccccccg	catgccgtcc	cgcatatttg	agctccgaac	3420
ctctcgccct	gcgcgcgcgc	gtgctccgtc	gccgcgcgcg	cgccatggaa	ttcgaacgct	3480
gacgtcatca	acccgctcca	aggaatcgcg	ggcccagtg	cactaggcgg	gaacacccag	3540
cgcgcggtgc	ccctggcagg	aagatggctg	tgagggacag	gggagtgccg	ccctgcaata	3600
tttgcatgtc	gctatgtgtt	ctgggaaatc	accataaacg	tgaaatgtct	ttggatttgg	3660
gaatcttata	agttctgtat	gagaccactc	tttcccagga	ttccaattca	gcgggagcca	3720
cctgatgaag	cttgatcggt	tggtctcgcg	tgagttggaa	tccatttttt	tctagactcg	3780
agataacttc	gtataatgta	tgctatacga	agttatggcg	cgccggtaac	cgaagtctct	3840
atactttcta	gagaatagga	acttcggaat	aggaacttct	taggtcaatt	ctaccgggta	3900
ggggaggcgc	ttttcccaag	gcagtctgga	gcatgcgctt	tagcagcccc	gctgggcact	3960
tggcgctaca	caagtggcct	ctggcctcgc	acacattcca	catccaccgg	taggcgcca	4020
ccggtcctgt	tctttgggtg	ccccttcgcg	ccaccttcta	ctcctccctc	agtcaggga	4080
ttcccccccg	ccccgcagct	cgcgctcgtc	aggacgtgac	aaatgggaag	agcacgtctc	4140
actagtctcg	tcagatgga	cagcacccgt	gagcaatgga	agcgggtagg	cctttggggc	4200
agcggccaat	agcagctttg	ctccttcgct	ttctgggctc	agaggctggg	aagggttggg	4260
tcggggggcg	ggctcagggg	cggtctcagg	ggcgggggcg	gcgcccgaag	gtcctcogga	4320
ggcccgccat	tctgcaagct	tcaaaagcgc	acgtctgcgc	cgctgttctc	ctcttccctca	4380
tctccgggcc	tttcgacctg	cagccaatat	gggatcgccc	attgaacaag	atggatttga	4440
cgcaggttct	ccggccgctt	gggtggagag	gctattcggc	tatgactggg	cacaacagac	4500
aatcggtgc	tctgatgcgc	ccgtgttccg	gctgtcagcg	cagggggcgc	cggttctttt	4560
tgtcaagacc	gacctgtccg	gtgccctgaa	tgaactgcag	gacgaggcag	cgcggtctatc	4620
gtggctggcc	acgacggggc	ttccttgcgc	agctgtgctc	gacgttgtca	ctgaagcggg	4680
aagggaactg	ctgctattgg	gcgaagtgc	ggggcaggat	ctcctgtcat	ctcaccttgc	4740
tcctgccgag	aaagtatcca	tcagtggctga	tgcaatgcgc	cggtcgcata	cgcttgatcc	4800
ggctacctgc	ccattcgacc	accaagcgaa	acatgcgcat	gagcgagcac	gtactcgat	4860
ggaagccggg	cttgctcgatc	aggatgatct	ggaogaaag	catcaggggc	tcgcgccagc	4920
cgaactgttc	gccaggctca	agggcgcgat	gcccgcaggg	gaggatctcg	tcgtgacca	4980
tggcgatgcc	tgcttgccga	atatcatggt	ggaaaatggc	cgcttttctg	gattcatcga	5040

WO 2004/035782

PCT/EP2003/011233

15/39

ctgtggccgg	ctgggtgtgg	cggacogcta	tcaggacata	gogttggcta	cccgtgatat	5100
tgctgaagag	cttggcggcg	aatgggctga	cggottccctc	gtgctttacg	gtatcgccgc	5160
tcccgattcg	cagcgcacgc	ccttctatcg	ccttcttgac	gagttcttct	gaggggacgc	5220
atccgctgta	agtctgcaga	aattgatgat	ctattaaaca	ataaagatgt	ccactaaaat	5280
ggaagttttt	cctgtcatac	tttgttaaga	agggtgagaa	cagagtaoct	acattttgaa	5340
tggaaggatt	ggagctacgg	gggtgggggt	gggtggggat	tagataaatg	cctgctcttt	5400
actgaaggct	ctttactatt	gctttatgat	aatgtttcat	agttggatat	cataatttaa	5460
acaagcaaaa	ccaaattaag	ggccagctca	ttcctccccc	tcatgatcta	tagatctata	5520
gatctctcgt	gggatcattg	ttttctctct	gattcccaat	ttgtggttct	aagtactgtg	5580
gtttccaaat	gtgtcagttt	catagcctga	agaacagagat	cagcagcctc	tgttccacat	5640
acacttcatt	ctcagttatt	ttttgccaag	ttctaattcc	atcagaagct	gactctagat	5700
cccgcccgga	agttccctata	ctttctagag	aataggaact	tgggaatagg	aacttcaagc	5760
ttaagcgcta	gaagatgggc	gggagtcttc	tgggcaggct	taaaggctaa	cctgggtgtg	5820
gggcgttgct	ctgcagggga	attgaacagg	tgtaaaattg	gagggacaag	acttcccaca	5880
gattttcggg	tttgtcggga	agttttttta	taggggcaaa	taaggaaaat	gggaggatag	5940
gtagtcatct	gggggttttat	gcagcaaaaac	tacagggttat	tattgcttgt	gatccgcctc	6000
ggagtatttt	ccatcgaggt	agattaaaga	catgctcacc	cgagttttat	actctcctgc	6060
ttgagatcct	tactacagta	tgaatttaca	gtgtcgcgag	ttagactatg	taagcagaat	6120
tttaatcatt	tttaagagag	ccagtaoctc	atatccattt	ctcccgctcc	ttctgcagcc	6180
ttatcaaaag	gtatttttaga	acactcattt	tagcccccatt	ttcatttatt	atactggctt	6240
atccaacccc	tagacagagc	attggcaattt	tccctttcct	gatcttagaa	gtctgatgac	6300
tcatgaaacc	agacagatta	gttacatata	ccacaaatcg	aggctgtagc	tggggcctca	6360
acactgcagt	tctttttataa	ctccttagta	cactttttgt	tgatcccttg	ccttgatcct	6420
taatttttcag	tgtctatcac	ctctcccgct	agtgggtgtc	cacatttggg	cctattctca	6480
gtccagggag	ttttacaaca	atagatgtat	tgaatacca	aoctaaagct	taactttcca	6540
ctcccatgaa	tgcctctctc	ctttttctcc	atttataaac	tgagctatta	accattatga	6600
gttccagggtg	gatgtctcct	ccccatatta	cctgatgtat	cttacctatt	gccaggctga	6660
tatttttaaga	cattaaaagg	tatatttcat	tattgagcca	catgggtattg	attactgctt	6720
actaaaattt	tgtcattgtg	cacatctgta	aaaggtgggt	ccttttgga	tgcaagttc	6780
aggtgtttgt	tgtctttcct	gacctaagg	cctgtgagct	tgtatttttt	ctatttaagc	6840
agtgtcttct	cctggactgg	ottgaotcat	ggcattotac	acgttatttg	tggctctaat	6900
gtgattttgc	caagcttctt	caggacctat	aatttttgctt	gaottgtage	caaacacaag	6960
taaaatgatt	aagcaacaaa	tgtatttgtg	aagcttgggt	tttaggttgt	tgtgttgtgt	7020
gtgcttgtgc	tctataataa	tactatccag	gggctggaga	gggtggctcg	agttcaagag	7080
cacagactgc	tcttccagaa	gtcctgaggt	caattcccag	caaccacatg	gtggctcaca	7140
accatctgta	atgggatctg	atgccctott	ctgggtgtgc	tgaagaccac	aagtgtattc	7200
acattaaata	aataaatcct	ccttcttctt	cttttttttt	tttttaaga	gaatactgtc	7260
tccagtagaa	tttactgaag	taatgaaata	ccttgtgttt	gttccaatat	ggtagccaat	7320
aatcaaatga	ctctttaagc	actggaatg	ttaccaagga	actaattttt	atttgaagtg	7380
taactgtgga	cagaggagcc	ataactgcag	acttgtggga	tacagaagac	caatgcagac	7440
tttaatgtct	tttctcttac	actaagcaat	aaagaaataa	aaattgaact	tctagtatcc	7500
tatttgttta	aactgctagc	tttacttaac	ttttgtgctt	catctataca	aagctgaaag	7560
ctaagtctgc	agccattact	aaacatgaaa	gcaagtaatg	ataatttttg	atttcaaaaa	7620
tgtagggccca	gagtttagcc	agccagtggt	gggtgcttgc	tttatgcctt	taatccagc	7680
actctggagg	cagagacagg	cagatctctg	agtttgagcc	cagcctggct	tacacatcaa	7740
gttctatcta	ggatagccag	gaatacacac	agaaaacctg	ttggggaggg	gggctctgag	7800
atttcataaaa	attataattg	aagcattccc	taatgagcca	ctatggatgt	ggctaaatcc	7860
gtctaccttt	ctgatgagat	ttgggtatta	ttttttctgt	ctctgctgtt	ggttgggtct	7920
tttgacactg	tgggctttct	ttaaagcctc	cctcctgcca	tgtgggtctt	tgtttgtctac	7980
taacttccca	tggcttaaat	ggcatggctt	tttgccttct	aagggcagct	gctgagattt	8040
gcagcctgat	ttccagggtg	gggttgggaa	atctttcaaa	cactaaaatt	gtcctttta	8100
ttttttttta	aaaaatgggt	tatataataa	acctcataaa	atagtattga	ggagtgaagt	8160
ggactaatat	taaatgagtc	cctcccctat	aaaagagcta	ttaaggcttt	ttgtcttata	8220
cttaactttt	tttttaaatg	tggatatctt	agaaccaagg	gtcttagagt	tttagtatac	8280
agaaactggt	gcacgcctta	atcagatttt	ctagtttcaa	atccagagaa	tccaaattct	8340
tcacagccaa	agtcgaatta	agaatttctg	acttttaatg	ttaatttgct	tactgtgaat	8400
ataaaaaatga	tagcttttcc	tgaggcaggg	tctcactatg	tatctctgcc	tgatctgcaa	8460
caagatatgt	agactaaagt	tctgcctgct	tttgtctcct	gaataactaag	gttaaaatgt	8520
agtaataactt	ttggaacttg	caggtcagat	tcttttatag	gggacacact	aagggagctt	8580
gggtgatagt	tggtaaaaatg	tgtttcaagt	gatgaaaact	tgaattatta	tcaccgcaac	8640
ctacttttta	aaaaaaaaaag	ccaggcctgt	tagagcatgc	ttaagggatc	cctaggactt	8700
gctgagcaca	caagagtagt	tacttggcag	gctcctgggtg	agagcatatt	tcaaaaaaca	8760
aggcagacaa	ccaagaaact	acagttaagg	ttacctgtct	ttaaaccatc	tgcataatac	8820

WO 2004/035782

PCT/EP2003/011233

16/39

cagggatatt	aaaatattcc	aaataatatt	tcattcaagt	tttcccccat	caaattggga	8880
catggatttc	tccggtgaat	aggcagagtt	ggaaactaaa	caaattgttg	ttttgtgatt	8940
tgtgaaattg	ttttcaagtg	atagtttaaag	cccatgagat	acagaacaaa	gctgctattt	9000
cgaggtctct	tgggtttatc	tcagaagcac	ttctttgggt	ttccctgcac	tatccctgac	9060
atgtgctagg	cctaccttag	gctgattggt	gttcaaataa	acttaagttt	cctgtcaggt	9120
gatgtcatat	gatttcatat	atcaaggcaa	aacatgttat	atatgttaaa	catttgtact	9180
taatgtgaaa	gttaggtctt	tgtgggtttg	atttttaatt	ttcaaaaact	gagctaaata	9240
agtcattttt	acatgtctta	catttggttg	aattgtataa	ttgtgggttg	caggcaagac	9300
tctctgacct	agtaacccta	cctatagagc	actttgctgg	gtcacaagtc	taggagtcac	9360
gcatttcacc	ttgaagttga	gacgttttgt	tagtgtatac	tagtttatat	gttggaggac	9420
atgtttatcc	agaagatatt	caggactatt	tttgactggg	ctaaggaatt	gattctgatt	9480
agcaactgtta	gtgagcattg	agtggccttt	aggcttgaat	tggagtcact	tgtatatctc	9540
aaataatgct	ggcctttttt	aaaaagccct	tgttctttat	cacctgtttt	tctacataat	9600
ttttgttcaa	agaaataactt	gtttgggtct	ccttttgaca	acaatagcat	gttttcaagc	9660
catatttttt	ttcctttttt	tttttttttt	tggtttttgc	agacagggtt	tctctgtata	9720
gccttggtcg	tcctggaaact	cactttgtag	accaggctgg	cctcgaactc	agaaatccgc	9780
ctgctctctg	ctcctgagtg	ccgggattaa	aggcgtgcac	caccacgcct	ggctaagttg	9840
gatattttgt	tatataacta	taaccaatac	taactccact	gggtggattt	ttaattcagt	9900
cagtagtctt	aagtggctctt	tattggccct	tcattaaaaa	ctactgttca	ctctaacaga	9960
ggctggttgg	actagtggca	cttaagcaac	ttctaccgga	tatactagca	gattaagggt	10020
cagggtataga	aactagctta	gcgttttgtt	tacctaccag	ctttatacta	ccttgttctg	10080
atagaaatat	ttcaggacat	ctagcacgtg	tttaactcgag	ctgcaggatt	cgagggtccc	10140
ggcaggtcaa	ttctaccggg	taggggaggc	gcttttccca	aggcagtcct	gagcatgcgc	10200
tttagcagcc	ccgctgggca	cttggcgcta	cacaagtggc	ctctggcctc	gcacacatte	10260
cacatccacc	ggtaggcgcc	aaccggctcc	gttctttggt	ggccctctcg	cgccaccttc	10320
tactcctccc	ctagtcagga	agttcccccc	cgccccgcag	ctcgctcgt	gcaggacgtg	10380
acaaatggaa	gtagcacgtc	tcactagtct	cgtgcagatg	gacagcaccg	ctgagcaatg	10440
gaagcgggta	ggccttttgg	gcagcggcca	atagcagctt	tgotccttgc	ctttctgggc	10500
tcagaggtcg	ggaagggggt	ggtccggggg	cgggtccagg	ggcgggctca	ggggcggggc	10560
gggcgcccga	aggtcctccg	gaggcccgcc	attctgcacg	cttcaaaaag	gcacgtctgc	10620
cgcgctgttc	tcctcttctc	catctccggg	cctttcgacc	tgcagccaat	gcaccgtcct	10680
tgccatcatg	gcctcgtacc	ccggccatca	acacgcgtct	gcgttcgacc	aggctgcgcg	10740
ttctcgcggc	catagcaacc	gacgtacggc	gttgccgcct	cgccggcagc	aagaagccac	10800
ggaagtccgc	ccggagcaga	aatgcccac	gctactgcgg	gtttatatag	acggtcccca	10860
cgggatgggg	aaaaccacca	coaogcaact	gotgggtggc	ctgggttcgc	gcgacgatat	10920
cgtctacgta	cccgagccga	tgaacttact	gcgggtctgc	ggggcttcgc	agacaatcgc	10980
gaacatctac	accaacacaac	accgcctoga	ccagggtgag	atatacgccg	gggagcgggc	11040
ggtggtaatg	acaagcgccc	agataacaat	gggcatgcct	tatgcctgta	ccgaogccgt	11100
tctggctcct	catatcgggg	gggaggctgg	gagctcacat	gccccgcccc	cgccctcac	11160
cctcatcttc	gaccgccatc	ccatcgccgc	cctcctgtgc	taccggcccg	cgcggtacct	11220
tatgggcagc	atgaccccc	aggccgtgct	ggcgttcgtg	gcccctcatc	cgccgacctt	11280
gcccggcacc	aacatcgtgc	ttggggccct	tcgggaggac	agacacatcg	accgcctggc	11340
caaacgcgag	cgccccggcg	agcggctgga	cctggctatg	ctggctgoga	ttcgcccgct	11400
ttacgggcta	ctttcccaata	cgggtcggtta	tctgcagtcg	ggcgggtcgt	ggcgggagga	11460
ctggggacag	ctttcgggga	cgcccggtgc	gccocagggt	gccgagcccc	agagcaacgc	11520
gggcccacga	ccccatatcg	gggaacagtt	atttacccct	tttcggggcc	ccgagttgct	11580
ggcccccaac	ggcgacctgt	ataacgtgtt	tgcctggggc	ttggacgtct	tggccaaacg	11640
cctccgttcc	atgcacgtct	ttatcctgga	ttacgaacca	tcgcccggcg	gctgcccggga	11700
cgccctgctg	caacttaact	ccgggatggt	ccagacccac	gtcaccaccc	ccggctccat	11760
accgacgata	tgcgacctgg	cgcgcacgtt	tgcocgggag	atgggggagg	ctaactgagg	11820
ggatcgatcc	tctcgtgaag	tctgcagaaa	ttgatgatct	attaacaat	aaagatgtcc	11880
actaaaaatg	aagttttttc	tgtcatactt	tgttaagaag	ggtgagaaca	gagtacctac	11940
attttgaatg	gaaggattgg	agctacgggg	gtgggggtgg	ggtgggatta	gataaatgcc	12000
tgtctcttac	tgaaggctct	ttactattgc	tttatgataa	tgtttcatag	ttggatatca	12060
taatttaaac	aagcaaaaac	aaattaaggg	ccagctcatt	cctcccaact	atgatctata	12120
gatctataga	tctctcgtgg	gatcattggt	tttctcttga	ttcccacttt	gtggttctaa	12180
gtactgtggt	ttccaaatgt	gtcagtttca	tagcctgaag	aacgagatca	gcagcctctg	12240
ttccacatac	acttcattct	cagtatttgt	ttgccaaagt	ctaattccat	cagaagctga	12300
ctctagggcg	agctccaatt	cgccttatag	tgagtcgtat	tacaattcac	tggccgtcgt	12360
tttacaacgt	cgtgactggg	aaaaccctgg	cgttacccaa	cttaatcgcc	ttgcagcaca	12420
tccccctttc	gccagctggc	gtaatagcga	agaggcccg	accgatcgcc	cttcccaaca	12480
gttgccgcag	ctgaatggcg	aatgggacgc	gcctgtagc	ggcgcattaa	gcgcggcggg	12540
tgtggtgggt	acgcgcagcg	tgaccgctac	acttgccagc	gcccagcgc	ccgctccttt	12600

WO 2004/035782

PCT/EP2003/011233

17/39

```

cgctttcttc ccttcccttc tcgccacggt cgccggcttt ccccgtaag ctctaaatcg 12660
ggggctccct ttaggggttc gatttagtgc tttacggcac ctcgacccca aaaaacttga 12720
ttaggggtgat ggttcacgta gtggggccat gccotgatag acgggttttc gccctttgac 12780
gttggagtcc acgttcttta atagtggact cttgttccaa actggaacaa cactcaaccc 12840
tatctcggtc tattcttttg atttataagg gattttgccg atttcggcct attggttaaa 12900
aaatgagctg atttaacaaa aatttaacgc gaattttaac aaaatattaa cgttacaat 12960
ttaggtggca cttttcgggg aaatgtgccc ggaaccccta tttgtttatt tttctaaata 13020
cattcaataa tgtatccgct catgagacaa taaccctgat aaatgcttca ataataatga 13080
aaaaggaaga gtatgagtat tcaacatttc cgtgtcgccc ttattccctt ttttgcggca 13140
ttttgccttc ctgtttttgc tcacccagaa ctgctgggtga aagtaaaaga tgctgaagat 13200
cagttgggtg caogagtggg ttacatcgaa ctggatctca acagcggtaa gatccttgag 13260
agttttcgcc ccgaagaaog ttttccaatg atgagcaott ttaaagttct gctatgtggc 13320
gcgggtattat cccgtattga cgcggggcaa gagcaactcg gtcgcccgat acactattct 13380
cagaatgact tggttgagta ctaccagtc acagaaaagc atcttacgga tggcatgaca 13440
gtaagagaat tatgcagtgc tgccataacc atgagtata acactgcggc caacttactt 13500
ctgacaacga tcggaggacc gaaggagcta accgcttttt tgcacaacat gggggatcat 13560
gtaactcgcc ttgatcgttg ggaaccggag ctgaatgaag ccataccaaa cgacgagcgt 13620
gacaccaoga tgcctgtagc aatggycaaca acgttgcgca aactattaac tggcgaacta 13680
cttactctag cttcccggca acaattaata gactggatgg aggcggataa agttgcagga 13740
ccacttctgc gctcggccct tccgggtggc tggtttattg ctgataaate tggagccggg 13800
gagcgtgggt ctogcgggat cattgcagca ctggggccag atggttaagc ctcccgtatc 13860
gtagttatct acacgacggg gagtccaggc actatggatg aacgaaatag acagatcgct 13920
gagataggtg cctcactgat taagcattgg taactgtcag accaagtta ctcatatata 13980
cttttagattg atttaaaact tcatttttaa tttaaaagga tctaggtgaa gatccttttt 14040
gataactcta tgaccaaaat cccttaacgt gagttttcgt tccactgagc gtcagacccc 14100
gtagaaaaga tcaaaggatc ttcttgagat cctttttttc tgcgcgtaat ctgctgcttg 14160
caaacaaaaa aaccaccgct accagcggtg gtttgtttgc cggatcaaga gctaccaact 14220
ctttttccga aggttaactgg cttcagcaga gcgcagatac caaataactgt ccttctagt 14280
tagccgtagt taggccacca cttcaagaac tctgtagcac cgcctacata cctcgetctg 14340
ctaactcctgt taccagtggc tgcctgccag ggcgataagt cgtgtcttac cgggttggac 14400
tcaagacgat agttacogga taaggcgagc cggtcgggct gaacggggggg ttcgtgcaca 14460
cagccagctc tggagcgaac gacctacacc gaactgagat acctacagcg tgagctatga 14520
gaaagcgcca cgcttccoga agggagaaaag gcggacaggt atccggtaag cggcagggtc 14580
ggaacaggag agcgcacgag ggagcttcca gggggaaacg cctggtatct ttatagtct 14640
gtcgggtttc gccacctctg acttgagcgt cgatttttgt gatgctctgc agggggggcg 14700
agcctatgga aaaacgccag caacgcggcc tttttacggt tcctggcctt ttgctggcct 14760
tttgctcaca tgttctttcc tgcgttatec cctgattctg tggataaccg tattaccgcc 14820
tttgagttag ctgataccgc tcgccgcagc cgaacgaccc agcgcagcga gtcagttagc 14880
gaggaagcgg aagacgcgcc aatacgcaaa ccgcctctcc ccgcgcgttg gccagttcat 14940
taatgaagct ggcacgacag gtttcccgac tggaaaagcg gcagtgagcg caacgcaatt 15000
aatgtgagtt agctcactca ttaggcaccc caggctttac actttatgct tccggctcgt 15060
atgttggtg gaattgtgag cggataacaa tttcacacag gaaacagcta tgaccatgat 15120
tacgccaagc gcgcaattaa cctcactaa agggacaaca agctgtcgag atctagatat 15180
cgatggccat agagttacg

```

<210> 7

<211> 4640

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Sequence of
RLuc-U6-shRNA neo insert

<400> 7

```

tctaggtaac cgatatccct gcaggggtga cctgcacgtc tagggogcag tagtccaggg 60
tttccttgat gatgtcatac ttatcctgtc cctttttttt ccacagctcg cggttgagga 120
caaaactcttc gcggtctttc cagtactcct gcagggtgact gactgagtcg agatctgcga 180
tctaagtaag cttggcattc cggtaactgtt ggtaaagcca ccatggcttc caaggtgtac 240
gaccccagc aacgcaaacg catgatcaact gggcctcagt ggtgggctcg ctgcaagcaa 300
atgaacgtgc tggactcctt catcaactac tatgattccg agaagcacgc cgagaacgcc 360
gtgatttttc tgcatggtaa cgtgcctcc agctacctgt ggaggcacgt cgtgcctcac 420

```

WO 2004/035782

PCT/EP2003/011233

18/39

atcgagcccg	tggctagatg	catcatccct	gatctgatcg	gaatgggtaa	gtccggcaag	480
agcgggaatg	gctcatatcg	cctcctggat	cactacaagt	acctcaccgc	ttgggtcgag	540
ctgctgaacc	ttccaaagaa	aatcatcttt	gtggggccacg	actggggggc	ttgtctggcc	600
tttcactact	cctacgagca	ccaagacaag	atcaaggcca	tcgtccatgc	tgagagtgtc	660
gtggacgtga	tcgagtcctg	ggacgagtgg	cctgacatcg	aggaggatat	cgccctgata	720
aagagcgaag	aggcgagaaa	aatggtgctt	gagaataact	tcttcgtcga	gaccatgctc	780
ccaagcaaga	tcatgoggaa	actggagcct	gaggagtctg	ctgcoctacct	ggagccattc	840
aaggagaagg	gcgagggttag	acggcctacc	ctctcctggc	ctcgcgagat	ccctctcggt	900
aaggggaggca	agcccagcgt	cgtccagatt	gtccgcaact	acaacgccta	ccttcggggc	960
agcgacgatc	tgcctaagat	gttcatcgag	tccgacccctg	ggttcttttc	caacgctatt	1020
gtcgagggag	ctaagaagtt	ccctaaccacc	gagttcgtga	agggtgaagg	cctccacttc	1080
agccaggagg	acgctccaga	tgaatgggt	aagtacatca	agagcttcgt	ggagcgcggtg	1140
ctgaagaacg	agcagtaatt	ctagaccggt	tcgagatcca	ggcgcggtatc	aataaaagat	1200
cattatctttc	aatagatctg	tgtgttgggt	ttttgtgtgc	cctggggggag	ggggaggcca	1260
gaatgaggcg	cggccaagg	ggaggggggag	gccagaatga	ccttggggga	ggggaggcc	1320
agaatgacct	tgggggagg	ggaggccaga	atgaggcgcg	gatccgtcga	cttaattaag	1380
gccagggatc	ttcaagcaga	cctacagcaa	gttcgacaca	aactcacaca	acgatgacgc	1440
actactcaag	aactacgggc	tgtctactg	cttcaggaag	gacatggaca	aggtcgagac	1500
attcctgcgc	ategtgcagt	gcccgtctgt	ggagggcagc	tgtggcttct	agctgcccg	1560
gtggcattcc	tgtgaccttc	ccccagtgcc	tctcctggcc	ctggaagttg	ccactccagt	1620
gcccaccagc	cttgtccta	taaaattaa	ttgcatcatt	ttgtctgact	aggtgtcctt	1680
ctataatatt	atggggtgga	ggggggtggt	atggagcaag	gggcaagttg	ggaagacaac	1740
ctgtaggggc	tgcgggggtct	attgggaacc	aagctggagt	gcagtggcac	aatcttggct	1800
cactgcaatc	tccgcctcct	gggttcaagc	gattctcctg	cctcagcctc	ccgagttggt	1860
gggatccag	gcatgcatga	ccaggctcag	ctaatttttg	tttttttgg	agagacgggg	1920
tttcaccata	ttggccaggc	tgtctccaa	ctcetaatct	caggtgatct	accacacttg	1980
gcctcccaaa	ttgctgggat	tacaggcggt	aaccactget	cccttccttg	tccttctgat	2040
tttaaaataa	ctataccagc	aggaggacgt	coagcacacg	cataggctac	ctggccatgc	2100
ccaaccggtg	ggacatttga	gttgcttget	tggcactgtc	ctctcatgcg	ttgggtccac	2160
tcagtagatg	cotgttgaat	taagcttatt	taaataggcc	ggccataact	tcgtataatg	2220
tatgctatac	gaagtattatg	atccagtgg	aagacgcgca	ggcaaaacgc	accacgtgac	2280
ggagcgtgac	cgcgcgccga	gcccagggtc	gggcagggaag	agggcctatt	toecatgatt	2340
ccttcatatt	tgcataatac	atacaaggct	gttagagaga	taattagaat	taatttgact	2400
gtaaacacaa	agatattagt	acaaaatacg	tgacgtagaa	agtaataatt	tcttgggtag	2460
tttgcaattt	taaaattatg	ttttaaaatg	gactatcata	tgettaccgt	aaacttgaag	2520
tatttcgatt	tcttggcttt	atatatcttg	tggaaaggac	gaaacacccg	gattccaatt	2580
cagcgggagc	cacctgatga	agcttgatcg	ggtggctctc	getgagttgg	aatccatttt	2640
tttctagact	cgagataact	tcgtataatg	tatgctatac	gaagttatgg	cgcgcgggta	2700
accgaagttc	ctatactttc	tagagaatag	gaacttcgga	ataggaactt	cttaggtcaa	2760
ttctaccggg	taggggaggc	gcttttccca	aggcagtcgt	gagcatgcgc	tttagcagcc	2820
ccgctgggca	cctggcgcta	cacaagtggc	ctctggcctc	gcacacatte	cacatccacc	2880
ggtaggcgcc	aaccggctcc	gttctttggt	ggccctctcg	cgccaccttc	tactcctccc	2940
ctagtcaggga	agttcccccc	cgcccccgag	ctcgcgtcgt	gcaggacgtg	acaaatggaa	3000
gtagcacgtc	tcactagtct	cgtgcagatg	gacagcaccg	ctgagcaatg	gaagcgggta	3060
ggcctttggg	gcagcggcca	atagcagctt	tgctccttcg	ccttctgggc	tcagagggtg	3120
ggaaggggtg	ggtccggggg	cgggctcagg	ggcgggctca	ggggcggggc	gggcgcgcga	3180
aggtcctccg	gaggcccggc	attctgcacg	cttcaaaagc	gcacgtctgc	cgcgctgttc	3240
tcctcttctc	catctccggg	cctttcgacc	tgacgccaat	atgggatcgg	ccattgaaca	3300
agatggattg	cacgcagggt	ctccggccgc	ttgggtggag	aggctattcg	gctatgactg	3360
ggcacaaacg	acaatcggtc	gctctgattc	cgccgtgttc	cggctgtcag	cgcaggggcg	3420
cccggttctt	tttgtcaaga	ccgacctgtc	cggtgccctg	aatgaactgc	aggacgggca	3480
agcgcggcta	tcgtggctgg	ccacgacggg	cgttccttgc	gcagctgtgc	tcgacgttgt	3540
cactgaagcg	ggaagggact	ggctgctatt	gggcgaagtg	ccggggcagg	atctcctgtc	3600
atctcacctt	gctcctgco	agaaagtate	catcatggct	gatgcaatgc	ggcggtgtca	3660
taogcttgat	cgggctacct	gcccattcga	ccaccaagcg	aaacatcgca	tcgagcgagc	3720
acgtactcgg	atggaagccg	gtcttgtcga	tcaggatgat	ctggacgaag	agcatcaggg	3780
cgtcgcgcca	gcccgaactgt	tcgccaggct	caaggcgcgc	atgcccgacg	gcgaggatct	3840
gctcgtgacc	catggcgatg	cctgcttgcc	gaatatcatg	gtggaaaatg	gccgcttttc	3900
tggattcato	gactgtggcc	ggctgggtgt	ggcgagccgc	tatcaggaca	tagcgttggc	3960
taccogtgat	attgctgaag	agcttggcgg	cgaattgggt	gaccgcttcc	tcgtgtctta	4020
cggtatcgcc	gctcccgatt	cgcagcgcat	cgccttctat	cgccttcttg	acgagttctt	4080
ctgaggggat	cgatccgctg	taagtctgca	gaaattgatg	atctattaaa	caataaagat	4140
gtccactaaa	atggaagttt	ttcctgtcat	actttgttaa	gaagggtgag	aacagagtac	4200

WO 2004/035782

19/39

PCT/EP2003/011233

```

ctacattttg aatggaagga ttggagctac gggggtgggg gtggggtggg attagataaa 4260
tgctgctctt ttactgaagg ctctttacta ttgotttatg ataatgtttc atagttggat 4320
atcataattt aaacaagcaa aaccaaatta agggcoagct cattcctccc actcatgac 4380
tatagatcta tagatctctc gtgggatcat tgtttttctc ttgattccca ctttgtggtt 4440
ctaagtactg tggtttccaa atgtgtcagt ttcatagcot gaagaacgag atcagcagcc 4500
tctgttccac atacacttca ttctcagtat tgttttgcca agttctaatt ccatcagaag 4560
ctgactctag atcccgcgcc gaagttccta tactttctag agaataggaa cttcggaata 4620
ggaacttcaa gcttaagcgc                                     4640

```

<210> 8

<211> 15174

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Targeting
vector for Rosa26 locus with a Rluc-U6-shRNA neo
insert

<400> 8

```

ctagggataa cagggttaata tagccgcgcc aggcctccg agcgtggtgg agccgtttctg 60
tgagacagcc ggggtacgagt cgtgacgctg gaaggggcaa gcgggtggtg ggcaggaatg 120
cggtccgccc tgcagcaacc ggagggggag ggagaaggga gcggaaaagt ctccaccgga 180
cgcgcccatg gctcgggggg gggggggcag cggaggagcg cttccggccg acgtctcgtc 240
gctgattggc ttcttttctt cccgcccgtg gtgaaaacac aaatggogtg ttttggttgg 300
cgtaaggcgc ctgtcagtta acggcagccg gagtgcgcag ccgcggcgag cctcgctctg 360
cccactgggt ggggcggggg gtaggtgggg tagggcgagc tggacgtgcg ggccggtcgc 420
gcctctggcg gggcggggga ggggagggag ggtcagcgaa agtagctcgc gcgcgagcgg 480
ccgcccaccc tccgcttccct ctgggggagt cgttttaccc gcgcgggccc gggcctcgtc 540
gtctgattgg ctctcggggc ccagaaaact ggcccttgcc attggctcgt gttcgtgcaa 600
gttgagtcca tccgcccggc agcggggggc gcgaggaggc gctcccaggt tccggccctc 660
ccctcggccc ccgcggcgag agtctggccg ccgcgccctg cgcaacgtgg caggaagcgc 720
gcgctggggg cggggacggg cagtaggcgt gacggctgc ggggcgggtg caagcacgtt 780
tccgacttga gttgcctcaa gaggggcggtg ctaggccaga cctccatcgc gcactccggg 840
gagtggaggg aaggagcgag ggctcagttg ggctgttttg gaggcaggaa gcacttgctc 900
tcccaaagtc gctctgagtt gttatcagta agggagctgc agtggagtag gcggggagaa 960
ggccgcaccc ttctcgggag gggggagggg agtgttgcaa tacotttctg ggagttctct 1020
gctgcctcct ggcttctgag gaccgcccgt ggcctgggag aatccottcc cctcttccc 1080
tcgtgactcg caactccagt ctttctaggt aaccgatata cctgcagggg tgacctgac 1140
gtctaggcgc cagtagtcca gggtttccct gatgatgtca tacttatcct gtcccttttt 1200
ttccacagc tcggggttga ggacaaaact ttccgggtct ttccagtact cctgcaggtg 1260
actgactgag tcgagatctg cgatctaagt aagcttgcca ttccggtact gttggttaaag 1320
ccaccatggc ttccaaggtg tacgaccccg agcaacgcaa accgatgac actgggcctc 1380
agtgggtggc tcgctgcaag caaatgaaag tgctggactc cttcatcaac tactatgatt 1440
ccgagaagca ccgcgagaac gccgtgattt ttctgcatgg taacgctgco tccagctacc 1500
tgtggaggca cgtcgtgctt cacatcgagc ccgtggctag atgcatcate cctgatctga 1560
tcggaatggg taagtccggc aagagcggga atggctcata tcgctcctg gatcactaca 1620
agtaectcac cgcttggttc gagctgctga accctccaaa gaaaatcctc tttgtgggcc 1680
acgactgggg ggcttgtctg gcctttcact actcctacga gcaccaagac aagatcaagy 1740
ccatcgctca tgctgagagt gtcgtggacg tgatcgagtc ctgggacgag tggcctgaca 1800
tcgaggagga tatcgccctg atcaagagcg aagagggcga gaaaatgggt cttgagaata 1860
acttcttcgt cgagaccatg ctcccaagca agatcatgcg gaaactggag cctgaggagt 1920
tcgctgecta cctggagcca ttcaaggaga agggcgaggt tagacggcct accctctcct 1980
ggcctcgcca gatccctctc gtttaaggag gcaagcccga cgtcgtccag attgtccgca 2040
actacaacgc ctaccttcgg gccagcgacg atctgcctaa gatgttcacg gactccgacc 2100
ctgggttctt ttccaacgct attgtcgagg gagctaagaa gttccctaac accgagttcg 2160
tgaagggtgaa gggcctccac ttcagccagg aggacgctcc agatgaaatg ggtaagtaca 2220
tcaagagctt cgtggagcgc gtgctgaaga acgagcagta attctagacc ggttcgagat 2280
ccaggcgcgg atcaataaaa gatcattatt ttcaatagat ctgtgtgttg gttttttgtg 2340
tgccctgggg gagggggagg ccagaatgag gcgcggccaa gggggagggg gaggccagaa 2400
tgacctgggg ggagggggag gccagaatga ccttggggga gggggaggcc agaattgaggc 2460
gcggatccgt cgacttaatt aaggccaggg atcttcaagc agacctacag caagttcgac 2520

```

WO 2004/035782

20/39

PCT/EP2003/011233

acaaactcac	acaacgatga	cgcactactc	aagaactacg	ggetgcteta	ctgcttcagg	2580
aaggacatgg	acaaggtcga	gacattcctg	cgcacgtgc	agtgcgcgtc	tgtggagggg	2640
agctgtggct	tctagctgcc	cgggtggcat	ccctgtgacc	cctcccaggt	gcctctcctg	2700
gocctggaag	ttgccactcc	agtgcaccac	agccttgtcc	taataaaatt	aagttgcac	2760
atthttgtctg	actaggtgtc	cttctataat	attatggggg	ggaggggggt	ggtatggagc	2820
aaggggcaag	ttgggaagac	aacctgtagg	gcctgcgggg	tctattggga	accaagctgg	2880
agtgcagtg	cacaatcttg	gctcactgca	atctccgcct	cctgggttca	agcgattctc	2940
ctgcctcage	ctcccagatt	gttgggattc	caggcatgca	tgaccagget	cagctaattt	3000
ttgttttttt	ggtagagacg	gggtttcacc	atattggcca	ggctgggtcc	caactcctaa	3060
tctcaggtga	tctaccaccc	ttggcctccc	aaattgctgg	gattacagge	gtgaaccact	3120
gctcccttcc	ctgtccttct	gatttttaaaa	taactatacc	agcaggagga	cgtccagaca	3180
cagcataggg	tacctggcca	tgcccaaccg	gtgggacatt	tgagttgctt	gcttggcact	3240
gtcctctcat	gcgttgggtc	cactcagtag	atgcctgttg	aattaagctt	atttaaatag	3300
gccggccata	acttcgtata	atgtatgcta	tacgaagtta	tggatccagt	ggaaagacgc	3360
gcaggcaaaa	cgcaccacgt	gacggagcgt	gaccgogcgc	cgagcccaag	gtcgggcagg	3420
aagagggoct	atttcccatg	attccttcat	atttgcatat	acgatacaag	gctgttagag	3480
agataattag	aattaatttg	actgtaaaca	caaagatatt	agtacaaaat	acgtgacgta	3540
gaaagtaata	atttcttggg	tagtttgcag	ttttaaaatt	atgttttaaa	atggactatc	3600
atatgcttac	cgtaacttga	aagtatttcg	atttcttggc	tttatataatc	ttgtggaaag	3660
gacgaaacac	cgggattcca	attcagcggg	agccacctga	tgaagcttga	togggtggct	3720
ctcgtctagt	tggaaatccat	ttttttctag	actcgagata	acttcgtata	atgtatgcta	3780
tacgaagtta	tggcgcgccg	gtaaccgaag	ttcctatact	ttctagagaa	taggaacttc	3840
ggaataggaa	cttcttaggt	caattctacc	gggtaggggg	ggcgttttcc	ccaaggcagt	3900
ctggagcatg	cgttttagca	gcccgcgtgg	gcacttggcg	ctacacaagt	ggcctctggc	3960
ctcgcacaca	ttccacatcc	accggtaggc	gccaaccggc	tccgttcttt	ggtggccctt	4020
tcgcgccacc	ttctactcct	cccctagtca	ggaagttoct	cccgcgcccg	cagctcgcgt	4080
cgtgcaggac	gtgacaaatg	gaagttagc	gtotcactag	tctcgtgcag	atggacagca	4140
ccgctgagca	atggaagcgg	gtaggccttt	ggggcagcgg	ccaatagcag	ctttgctctc	4200
tcgctttctg	ggctcagagg	ctgggaaggg	gtgggtccgg	gggcggggctc	agggcggggc	4260
tcaggggagg	ggcggggcgc	cgaaggctct	cgggagggcc	ggcattctgc	acgttcaaaa	4320
agcgacgctc	tgcgcgcgtg	ttctcctctt	cctcatctcc	gggcctttcg	acctgcagcc	4380
aatatgggat	cggccattga	acaagatgga	ttgcacgcag	gttctccggc	cgcttgggtg	4440
gagaggctat	toggctatga	ctgggcacaa	cagacaatcg	gctgctctga	tgccgcctgt	4500
ttccggctgt	cagcgcaggg	gcgcgcgggt	ctttttgtca	agaccgaact	gtccgggtgc	4560
ctgaatgaac	tgcaggacga	ggcagcgcgg	ctatcgtggc	tggccaacgac	gggcgttctc	4620
tgcgcagctg	tgtctgacgt	tgtcactgaa	gcgggaaggg	actggctgct	attggcgcaa	4680
gtgccggggc	aggatctcct	gtcatctcac	cttgcctctg	ccgagaaagt	atccatcatg	4740
gctgatgcaa	tgcggcgggt	gcatacgctt	gatccggcta	cctgcccatt	cgaccaccaa	4800
gcgaaacatc	gcacgagcg	agcacgtact	cggatggaa	ccggctctgt	cgatcaggat	4860
gatctggacg	aagagcatca	ggggctcgcg	ccagccgaac	tgttcgccag	gotcaaggcg	4920
cgcattgccg	acggcgagga	tctcgtcgtg	accctatggc	atgcctgctt	gcccgaatatc	4980
atggtggaaa	atggccgctt	ttctggatcc	atcgactgtg	gccggctggg	tgtggcggac	5040
cgctatcagg	acatagcgtt	ggctaccctg	gatattgctg	aagagcttgg	cggcgcaattg	5100
gctgaccgct	tctcgtgct	ttacgggtatc	gccgtctccg	attcgacgcg	catcgcttcc	5160
tatcgcttcc	ttgacgagtt	cttctgaggg	gatcgatccg	ctgtaagtct	gcagaaattg	5220
atgatctatt	aaacaataaa	gatgtccact	aaaatggaag	tttttctgt	catactttgt	5280
taagaagggt	gagaacagag	tacctacatt	ttgaatggaa	ggattggagc	tacgggggtg	5340
ggggtggggg	gggattagat	aaatgcctgc	tctttactga	aggetcttta	ctattgcttt	5400
atgataatgt	ttcatagttg	gatatcataa	tttaaacaa	caaaaccaa	tttaaggcca	5460
gctcattcct	cccactcatg	atctatagat	ctatagatct	ctcgtgggat	cattgttttt	5520
ctcttgatcc	ccactttgtg	gttctaagta	ctgtggtttc	caaatgtgtc	agtttcatag	5580
cctgaagaac	gagatcagca	gcctctgttc	cacatacact	tcattctcag	tattgttttg	5640
ccaagttcta	attccatcag	aagctgactc	tagatccgcg	gccgaagttc	ctatactttc	5700
tagagaatag	gaacttcgga	ataggaactt	caagcttaag	cgctagaaga	tgggcgggag	5760
tcttctgggc	aggettaaa	gctaacctgc	tgtgtggggc	ttgtcctgca	ggggaattga	5820
acaggtgtaa	aattggaggg	acaagacttc	ccacagattt	tccgttttgt	cgggaagttt	5880
tttaatatgg	gcaataaagg	aaaatggggg	gataggtagt	catctggggg	tttatgcagc	5940
aaaactacag	gttattattg	cttgtgatcc	gcctcggagt	attttccatc	gaggtagatt	6000
aaagacatgc	tcacccgagt	tttatactct	cctgcttgag	atccttacta	cagtatgaaa	6060
ttacagtgtc	gcgagttaga	ctatgtaagc	agaattttta	tcatttttaa	agagccaggt	6120
acttcatatc	catttctccc	gctccttctg	cagccttata	aaaaggtatt	ttagaacact	6180
catttttagcc	ccattttcat	ttattatact	ggcttatoca	acccttagac	agagcatttg	6240
cattttccct	ttcctgatct	tagaagtctg	atgactcatg	aaaccagaca	gatttagttac	6300

WO 2004/035782

21/39

PCT/EP2003/011233

atacaccaca	aatcgaggct	gtagctgggg	cctcaacact	gcagttctti	tataactcet	6360
tagtacactt	tttgttgatc	ctttgccttg	atccttaatt	ttcagtgctc	atcacctctc	6420
ccgtcagtg	tgttccacat	ttgggcctat	tctcagtgca	gggagtttta	caacaataga	6480
tgtattgaga	atccaacct	aagcttaact	ttccactccc	atgaatgcct	ctctcctttt	6540
tctccattta	taaactgagc	tattaacct	taatgggtcc	aggtggatgt	ctcctcccca	6600
tattacctga	tgtatcttac	atattgccag	gctgatattt	taagacatta	aaaggtatat	6660
ttcattattg	agccacatgg	tattgattac	tgcttactaa	aattttgtca	ttgtacacat	6720
ctgtaaaagg	tgggttcctt	tggaaagcaa	agttcaggtg	tttgttgtct	ttcctgacct	6780
aaggtcttgt	gagcttgat	ttttctctat	taagcagtg	tttctcttgg	actggttga	6840
ctcatggcat	ctcacacgtt	attgctgggt	taaatgtgat	tttgccaagc	ttcttcagga	6900
cctataattt	tgtctgactt	gtagccaaac	caagtaaaa	tgattaagca	acaaatgtat	6960
ttgtgaagct	tgggttttag	gttggtgtgt	tgtgtgtgct	tgtgctctat	aataatacta	7020
tccaggggct	ggagaggtgg	ctcggagttc	aagagcacag	actgctcttc	cagaagtcct	7080
gagttcaatt	cccagcaacc	acatggtggc	tcacaacct	ctgtaatggg	atctgatgcc	7140
ctcttctggt	gtgtctgaag	accacaagt	tattcacatt	aaataaataa	atcctccttc	7200
ttcttctttt	tttttttttt	aaagagaata	ctgtctccag	tagaattttac	tgaagtaatg	7260
aaatactttg	tgtttgttcc	aatatggtag	ccaataatca	aattactctt	taagcactgg	7320
aaatgtttac	aaggaaacta	tttttatttg	aagtgttaact	gtggacagag	gagccataac	7380
tgacagactg	tgggatacag	aagaccaatg	cagactttta	tgtcttttct	cttacactaa	7440
gcaataaaga	aataaaaaat	gaaactctag	tatcttattt	gtttaaactg	ctagctttac	7500
ttactttttg	tgttctatct	atacaaaagt	gaaagctaa	tctgcagcca	ttactaaaca	7560
tgaaagcaag	taatgataat	tttggatttc	aaaaatgtag	ggccagagtt	tagccagcca	7620
gtggtggtgc	ttgcctttat	gcctttaatc	ccagcactct	ggaggcagag	acaggcagat	7680
ctctgagttt	gagccagacc	tggtctacac	atcaagttct	atctaggata	gccaggaata	7740
cacacagaaa	ccctgttggg	gaggggggct	ctgagatttc	ataaaattat	aattgaagca	7800
ttccataatg	agccactatg	gatgtggcta	aatccgtcta	cctttctgat	gagatttggg	7860
tattattttt	tctgtctctg	ctggttggtg	ctcttttga	cactgtgggc	tttctttaaa	7920
gcctccttcc	tgccatgtgg	tctottgttt	gctactaact	tcccatggct	taaatggcat	7980
ggcttttttg	cttctaaggg	cagctgctga	gatttgcagc	ctgatttcca	gggtggggtt	8040
gggaaatctt	tcaaacacta	aaattgtcct	ttattttttt	ttttaaaaaa	tgggttatat	8100
aataaacctc	ataaaatagt	tatgaggagt	gaggtggact	aatattaaat	gagtccctcc	8160
octataaaag	agctattaag	gctttttgtc	ttatacttaa	cttttttttt	aaatgtggta	8220
tctttagaac	caagggtctt	agagttttag	tatacagaaa	ctggtgcatc	gcttaatcag	8280
attttctagt	ttcaaatcca	gagaatccaa	attcttcaca	gocaaagtca	aattaagaat	8340
ttctgacttt	taatgttaat	ttgcttactg	tgaatataaa	aatgatagct	tttcttgagg	8400
caggggtcca	ctatgtatct	ctgcctgac	tgcaacaaga	tatgtagact	aaagtctctg	8460
ctgcttttgt	ctcctgaata	ctaagggtta	aatgtagtaa	tacttttgga	acttgcaggt	8520
cagattcttt	tataggggac	acactaaggg	agcttgggtg	atagtgtgta	aaatgtgttt	8580
caagtgatga	aaacttgaat	tattatcaac	gcaacctact	ttttaaaaaa	aaaagccagg	8640
cctggttagag	catgcttaag	ggatccctag	gacttgotga	gcacacaaga	gtagttactt	8700
ggcaggctcc	tgggtgagag	atatttcaaa	aaacaaggca	gacaaccaag	aaactacagt	8760
taagggtacc	tgtcttttaa	ccatctgcat	atacacagg	atattaaaaa	attccaaata	8820
atatttcatt	caagttttcc	cccatcaaat	tgggacatgg	atttctccgg	tgaataggca	8880
gagttggaaa	ctaaacaaat	gttgggtttg	tgatttgtga	aattgttttc	aagtgatagt	8940
taaagcccat	gagatacaga	acaaagctgc	tatttcgagg	tctcttgggt	tatactcaga	9000
agcacttctt	tgggttttcc	tgcactatcc	tgatcatgtg	ctaggcctac	cttaggctga	9060
ttgttgttca	aataaaacta	agtttctctg	caggtgatgt	catatgattt	catatatcaa	9120
ggcaaaacat	gttatatatg	ttaaacaatt	gtacttaatg	tgaaagttag	gtctttgtgg	9180
gttgattttt	taatttttcaa	aacctgagct	aaataagtca	tttttacatg	tcttacattt	9240
ggtggaattg	tataattgtg	gtttgcaggc	aagactctct	gacctagtaa	ccctacctat	9300
agagcacttt	gctgggtcac	aagtctagga	gtcaagcatt	tcacottgaa	gttgagacgt	9360
tttgtttagtg	tatactagtt	tatatgttgg	aggacatgtt	tatccagaag	atattcagga	9420
ctatttttga	ctgggctaag	gaattgattc	tgatttagcac	tgttagtgag	cattgagtg	9480
ccttttaggt	tgaattggag	tcacttgtat	atctcaataa	atgctggcct	tttttaaaaa	9540
gccttgttgc	tttatcacc	tgttttctac	ataatttttg	ttcaaagaaa	tacttgtttg	9600
gatctccttt	tgacaacat	agcatgtttt	caagccatat	tttttttctt	tttttttttt	9660
ttttttgggt	tttcagagca	gggtttctct	gtatgacct	ggctgtcctg	gaactcactt	9720
tgtagaccag	gctggcctcg	aactcagaaa	tccgcctgcc	tctgcctcct	gagtgccggg	9780
attaaaggcg	tgcaccacca	cgcttggtca	agttggatat	tttggtatat	aactataacc	9840
aataactaact	ccactgggtg	gatttttaaat	tcagtcagta	gtcttaagt	gtctttattg	9900
gcccttcatt	aaaatctact	gttcaactcta	acagaggctg	ttgggtactag	tggcacttaa	9960
gcaacttctt	acggatatac	tagcagatta	agggtcagg	atagaaacta	gtctagcggt	10020
ttgtatacct	accagcttta	tactaccttg	ttctgataga	aatatttcag	gacatctagc	10080

WO 2004/035782

22/39

PCT/EP2003/011233

acgtgttaac tgcagctgca ggattcagagg gccccggcag gtcaattota ccgggtaggg 10140
gaggcgcttt tcccaaggca gtctggagca tgcgcttttag cagccccgct gggcacttgg 10200
cgctacacaa gtggcctctg gcctcgcaca cattccacat ccaccggtag gcgccaaccg 10260
gctccgttct ttggtggccc cttegcgcca ccttctaact cccccctagt cagggaagttc 10320
ccccccgccc cgcagctcgc gtctgtcagg acgtgacaaa tggaaagtag acgtctcaact 10380
agtctcgtgc agatggacag caccgctgag caatggaagc gggtaggcct ttggggcagc 10440
ggccaatagc agctttgtct cttecgctttc tgggctcaga ggctgggaag ggggtgggtcc 10500
gggggcgggc tcagggggcg gctcaggggc gggggcgggc cccgaaggte ctccggaggc 10560
ccggcattct gcacgcttca aaagcgcaog tctgcgcgcg tgttctcctc ttctcatct 10620
ccgggccttt cgacctgcag ccaatgcacc gtcccttgcca tcatggcctc gtaccccggc 10680
catcaacacg cgtctgcgtt cgaccaggct gcgcgtttct gcggccatag caaccgact 10740
acggcgcttg gccctcgcgc gcagcaagaa gccacggaag tccgcccgga gcagaaaatg 10800
cccacgctac tgcgggttta tatagacggt cccacggga tggggaaaac caccaccagc 10860
caactgctgg tggccctggg ttgcgcgcgac gatatcgctc acgtacccga gccgatgact 10920
tactggcggg tgetgggggc ttccgagaca atcgcaaca tctacaccac acaacaccgc 10980
ctcgaccagg gtgagatata ggccggggac gcggcggttg taatgacaag cgcccagata 11040
acaatgggca tgccttatgc cgtgaccgac gccgttctgg ctctcatat cgggggggag 11100
getgggagct cacatgcccc gcccccgccc ctcaacctca tcttcgaccg ccatcccatc 11160
ggcgccctcc tgtgctaccc ggccgcgcgc tactttatgg gcagcatgac cccccaggcc 11220
gtctgtgcgt tcgtggccct catccgcgcg accttgcccc gcaccaacat cgtgcttggg 11280
gcccttcctg aggcagacaca catcgaccgc ctggccaaac gccagcgccc cggcgagcgg 11340
ctggacctgg ctatgctggc tgcgattcgc cgcgtttacg ggctacttgc caatacgggtg 11400
cggtatctgc agtgccggcg gtctgtggcg gaggactggg gacagcttcc ggggacggcc 11460
gtgcgcgcgc aggggtgccg gccccagagc aacgcgggccc caccgaccca tatcggggac 11520
acgttattta cctgttttcg ggcccccgag ttgtgtggccc ccaacggcga cctgtataac 11580
gtgtttgcct gggccttggc cgtcttggcc aaacgcctcc gttccatgca cgtctttatc 11640
ctggattacg aaccaatgcc cgccggctgc cgggacgccc tgctgcaact tacctccggg 11700
atggtccaga cccacgtcac ccccccggc tccataccga cgatatgca cctggcgccg 11760
acgtttgccc gggagatggg ggaggctaac tgaggggatc gatccgtctc gtaagtctgc 11820
agaaattgat gatctattaa acaataaaga tgtccactaa aatggaagtt ttctctgtca 11880
tactttgtta agaagggtga gaacagagta cctacatttt gaatggaagg attggagcta 11940
cggggggtgg ggtgggggtg gattagataa atgcctgtct tttactgaag gctctttaact 12000
attgctttat gataatgttt catagtggga tatcataatt taaacaagca aaaccaaatt 12060
aagggccagc tcattcctcc cactcatgat ctatagatct atagatctct cgtgggatac 12120
ttgtttttct cttgattccc actttgtggc tctaagtaact gtggtttcca aatggtcag 12180
ttcataagcc tgaagaacga gatcagcagc ctctgttcca catacacttc attctcagta 12240
ttgttttgcc aagttctaatt tccatcagaa gctgacteta ggccgagctc caattcgccc 12300
tatagttagt cgtattacaa ttacttgccc gtcgttttac aacgtcgtga ctgggaaaac 12360
cctggcgta cccaacttaa tgccttgca gcacatcccc cttecgccag ctggcgtaat 12420
agcgaagagg ccgcaccga tgcctctcc caacagttgc gcagcctgaa tggcgaaatg 12480
gacgcgccct gtagcggcgc attaagcgcg gcgggtgtgg tggttacgcg cagcgtgacc 12540
getacacttg ccagcgccct agcgcccgct cctttcgctt tcttcccttc cttctcgc 12600
acgttcgctg gctttcccg tcaagcteta aatcgggggc tccctttagg gttccgattt 12660
agtgctttac ggcacctcga ccccaaaaaa cttgattagg gtgatggttc acgtagtggg 12720
ccatcgccct gatagacggt ttttcgccc ttgacgttgg agtccacgtt ctttaatagt 12780
ggactcttgt tccaaactgg aacaacactc aacctatct cggctctatc ttttgattta 12840
taagggattt tgccgatttc ggccatttgg ttaaaaaatg agctgattta acaaaaaatt 12900
aacgcgaatt ttaacaaaat attaacgctt acaatttagg tggcaatttt cggggaaatg 12960
tgcgcggaac ccctatttgt ttatttttct aaatacattc aaatatgtat ccgctcatga 13020
gacaataacc ctgataaatg cttcaataat attgaaaaag gaagagtatg agtattcaac 13080
atttccgtg gcgcccttatt cccttttttg cggcattttg ccttccgtgt tttgctcacc 13140
cagaaaacgt ggtgaaagta aaagatgctg aagatcagtt ggggtgcacga gtgggttaca 13200
tcgaactgga tctcaacagc ggtaagatcc ttgagagttt tcgcccogaa gaacgttttc 13260
caatgatgag cactttttaa gttctgctat gtggcgcggt attatcccgt attgacggcg 13320
ggcaagagca actcgggtgc cgcatacaact attctcagaa tgacttgggt gagtactcac 13380
cagtcacaga aaagcatctt acggatggca tgacagtaag agaattatgc agtgctgcca 13440
taaccatgag tgataacact gcggccaaact tactttctgac aacgatcgga ggaccgaag 13500
agctaaccgc ttttttgcac aacatggggg atcgtgtaac tcgccttgat cgttgggaac 13560
cggagctgaa tgaagccata ccaaacgacg agcgtgacac cagcatgcct gtagcaatgg 13620
caacaacgtt gcgcaaaacta ttaactggcg aactacttac tctagcttcc cggaacaat 13680
taatagactg gatggaggcg gataaagttg caggaccact tctgcgctcg gcccttccgg 13740
ctggctggtt tattgctgat aaatctggag ccggtgagcg tgggtctcgc ggtatcattg 13800
cagcactggg gccagatggt aagccctccc gtatcgtagt tatctacacg acggggagtc 13860

WO 2004/035782

PCT/EP2003/011233

23/39

aggcaactat	ggatgaacga	aatagacaga	tcgctgagat	aggtagcctca	ctgattaage	13920
atttgtaact	gtcagaccaa	gtttactcat	atatacttta	gattgattta	aaacttcatt	13980
tttaatttaa	aaggatctag	gtgaagatcc	tttttgataa	tctcatgacc	aaaatccctt	14040
aacgtgagtt	ttcgttccac	tgagcgtcag	accccgtaga	aaagatcaaa	ggatcttctt	14100
gagatccttt	ttttctgcgc	gtaatctgct	gcttgcaaac	aaaaaaacca	ccgtaccag	14160
cggtgggttg	tttgccggat	caagagctac	caactctttt	tccgaaggta	actggcttca	14220
gcagagcgca	gataccaaat	actgtccttc	tagtgtagcc	gtagttaggc	caccacttca	14280
agaactctgt	agcaccgcct	acatacctcg	ctctgttaat	cctgttacca	gtggctgctg	14340
ccagtggcga	taagtctgtt	cttaccgggt	tggactcaag	acgatatgta	ccggataagg	14400
cgcagcggtc	gggctgaacg	gggggttcgt	gcacacagcc	cagcttggag	cgaacgacct	14460
acaccgaact	gagataccta	cagcgtgagc	tatgagaaag	cgccacgctt	cccgaaggga	14520
gaaaggcgga	caggtatccg	gtaagcggca	gggtcggaac	aggagagcgc	acgagggagc	14580
ttccaggggg	aaacgcctgg	tatctttata	gtcctgtcgg	gtttcgccac	ctctgacttg	14640
agcgtcgatt	tttgtgatgc	tcgtcagggg	ggcggagcct	atggaaaaac	gccagcaacg	14700
cggccttttt	acggttcctg	gccttttgct	ggccttttgc	tcacatgttc	tttctcgct	14760
tatcccctga	ttctgtggat	aaccgtatta	ccgcctttga	gtgagctgat	accgctcgcc	14820
gcagccgaac	gaccgagcgc	agcaggtcag	tgagcgagga	agcggaaag	cgcccaatac	14880
gcaaacggcc	tctcccgcgc	cgttgggcga	ttcattaatg	cagctggcac	gacaggtttc	14940
ccgactggaa	agcgggcagt	gagcgcaacg	caattaatgt	gagttagctc	actcattagg	15000
caccccaggg	tttaactctt	atgcttccgg	ctcgtatgtt	gtgtggaatt	gtgagcggat	15060
aacaatttca	cacaggaaac	agctatgacc	atgattacgc	caagcgcgca	attaaccctc	15120
actaaaggga	acaaaagctg	tcgagatcta	gatatcgatg	gccatagagt	tacg	15174

<210> 9

<211> 4641

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Rluc tet01
insert

<400> 9

tctaggtaac	cgatatccct	gcaggggtga	cctgcacgtc	tagggcgag	tagtccaggg	60
tttcttgat	gatgtcatac	ttatcctgtc	cctttttttt	ccacagctcg	cggttgagga	120
caaaactctt	gcgggtcttt	cagtactcct	gcaggtgact	gactgagtcg	agatctgca	180
tctaagtaag	cttggcattc	cgttactggt	ggtaaagcca	ccatggcttc	caaggtgtac	240
gaccccgagc	aacgcaaacg	catgatcact	gggcctcagt	ggtgggctcg	ctgcaagcaa	300
atgaacgtgc	tggactcctt	catcaactac	tatgattccg	agaagcacgc	cgagaacgcc	360
gtgatttttc	tgcattgtaa	cgtgcctcc	agctacctgt	ggaggcacgt	cgtgcctcac	420
atcgagcccg	tggctagatg	catcatccct	gatctgatcg	gaatgggtaa	gtccggcaag	480
agcgggaatg	gctcatatcg	cctcctggat	cactacaagt	acctcaccgc	ttggttcgag	540
ctgctgaacc	ttccaaagaa	aatcatcttt	gtgggccacg	actggggggc	ttgtctggcc	600
tttactact	cctacgagca	ccaagacaag	atcaaggcca	tcgtccatgc	tgagagtgtc	660
gtggacgtga	tcgagtcctg	ggacgagtg	cctgacatcg	aggaggatat	cgccctgate	720
aagagcgaag	agggcgagaa	aatggtgctt	gagaataact	tcttcgtcga	gaccatgctc	780
ccaagcaaga	tcattgctgaa	actggagcct	gaggagtctg	ctgcctacct	ggagccattc	840
aaggagaagg	gcgaggttag	acggcctacc	ctctcctggc	ctcgcgagat	ccctctcggt	900
aagggaggca	agcccgacgt	cgtccagatt	gtccgcaact	acaacgecta	ccttcggggc	960
agcgacgac	tgcctaagat	gttcatcgag	tccgaccctg	gggtcttttc	caacgctatt	1020
gtcgagggag	ctaagaagtt	ccctaacacc	gagttcgtga	aggtagaagg	cctccacttc	1080
agccaggagg	acgctccaga	tgaaatgggt	aagtacatca	agagcttcgt	ggagcgcggt	1140
ctgaagaacg	agcagtaatt	ctagaccggg	tcgagatcca	ggcggggatc	aataaaagat	1200
cattattttc	aatagattctg	tgtgttggtt	ttttgtgtgc	cttgggggag	ggggaggcca	1260
gaatgagcgc	cggccaaggg	ggagggggag	gccagaatga	ccttggggga	gggggaggcc	1320
agaatgacct	tgggggaggg	ggagggccaga	atgaggcgcg	gatccgtcga	cttaattaag	1380
gccagggatc	ttcaagcaga	cctacagcaa	gttcgacaca	aactcacaca	acgatgacgc	1440
actactcaag	aactacgggc	tgtctactg	cttcagggaag	gacatggaca	aggctcgagac	1500
attcctgcgc	atcgtgoagt	gccgctctgt	ggagggcagc	tgtggcttct	agctgcccgg	1560
gtggcatccc	tgtgaccocct	ccccagtgcc	tctcctggcc	ctggaagttg	ccactccagt	1620
gccaccagc	cttgtcctaa	taaaattaag	ttgcatcatt	ttgtctgact	agggtgtcctt	1680
ctataatatt	atgggggtgga	gggggggtggt	atggagcaag	gggcaagttg	ggaagacaac	1740

WO 2004/035782

PCT/EP2003/011233

24/39

```

ctgtagggcc tgcgggggtct attgggaacc aagctggagt gcagtggcac aatcttggct 1800
cactgcaate tccgcctcct ggggttcaagc gattctcctg cctcagcctc ccgagttggt 1860
gggattccag gcatgcatga ccaggctcag ctaatttttg tttttttggt agagacgggg 1920
tttcaccata ttggccaggc tggctctcaa ctactaatct caggtgatct acccacttg 1980
gcctcccaaa ttgctgggat tacaggcggtg aaccactget cccttcctg tccttctgat 2040
tttaaaataa ctataccagc aggaggacgt ccagacacag cataggctac ctggccatgc 2100
ccaaccggtg ggacatttga gttgcttgct tggcactgtc ctctcatgcy ttgggtccac 2160
tcagtagatg cctgttgaat taagcttatt taaataggcc ggccataact tcgtataatg 2220
tatgctatac gaagtattgg atccagtggg aagacgcgca ggcaaacgc accacgtgac 2280
ggagcgtgac cgcgcgccga gcccaagggtc gggcaggaag agggcctatt tcccatgatt 2340
ccttcataatt tgcataatag atacaaggct gttagagaga taattagaat taatttgact 2400
gtaaacacaa agatattagt acaaaatacg tgacgtagaa agtaataatt tcttgggtag 2460
tttgtagttt taaaattatg ttttaaaatg gactatcata tgcttaccgt aacttgaaag 2520
tactctatca ttgatagagt tatatatctt gtggaaagga cgaaacaccg ggattccaat 2580
tcagcgggag ccacctgatg aagcttgatc ggggtggctc cgctgagttg gaatccattt 2640
ttttctagac tcgagataac ttctgtataat gtatgctata cgaagtattg gcgcgcgggt 2700
aaccgaagtt cctatacttt ctagagaata ggaacttcgg aataggaact tcttaggtca 2760
attctaccgg gtaggggagg cgtttttccc aaggcagttc ggagcatgcy ctttagcagc 2820
cccgtctggc acttggcgct acacaagtgg cctctggcct cgcacacatt ccacatccac 2880
cggtagggcg caaccggctc cgttcttttg tggcccttc cgcgccactt ctactctcc 2940
cctagtcagg aagttccccc ccgcccgcga gctcgcgtcg tgcaggacgt gacaaatgga 3000
agtagcacgt ctactagtc tcgtgcagat ggacagcacc gctgagcaat ggaagcgggt 3060
aggccttttg ggcagcggcc aatagcagct ttgctcctc gctttctggg ctgagaggct 3120
gggaaggggt ggggtccgggg gcgggctcag ggcggggtc aggggcgggg cgggcgcgg 3180
aaggtcctcc ggagggcccg catctctgac gcttcaaaag cgcacgtctg ccgcgctgtt 3240
ctcctctcc tcactctcgg gcctttcgac ctgcagccaa tatgggatcg gccattgaac 3300
aagatggatt gcacgcaggt tctccggcgg ttgggtgga gaggctattc ggctatgact 3360
gggcacaaca gacaatcggc tgctctgatg ccgcggtgtt ccggctgtca gcgcaggggc 3420
gcccggttct ttttgtcaag accgacctgt ccggtgcctt gaatgaactg caggacgagg 3480
cagcgcgggt atcgtggctg gccacgacgg gcgttccttg cgcagctgtg ctgcagcttg 3540
tactgaagc ggggaggggac tggctgctat tgggcgaagt gccggggcag gatctcctgt 3600
catctcacct tgctcctgcc gagaaagtat ccatcatggc tgatgcaatg cggcggctgc 3660
atagccttga tccggctacc tgcccattog accaccaagc gaaacatcgc atcgagcgag 3720
cacgtactcg gatggaagcc ggtcttgtcg atcaggatga tctggacgaa gagcatcagg 3780
ggctcgcgcc agccgaactg ttgcgccagg tcaaggcgcg catgcccgac ggcgaggatc 3840
tcgtcgtgac ccatggcgat gcctgcttgc cgaatatcat ggtggaaaat ggccgctttt 3900
ctggattcat cgactgtggc cggttgggtg tggcggaacc ctatcaggac atagcgttgg 3960
ctaccogtga tattgctgaa gagcttggcg gcgaatgggc tgaccgcttc ctctgtcttt 4020
acggtatcgc cgtctccgat tcgcagcgca tgccttctt tcgacttctt gacgagttct 4080
tctgagggga tcgatccgct gtaagtctgc agaaattgat gatctattaa acaataaaga 4140
tgtccaactaa aatggaagtt ttctctgtca tactttgtta agaagggtga gaacagagta 4200
cctacatttt gaatggaagg attggagcta cgggggtggg ggtgggggtg gattagataa 4260
atgctgtctc ttactgaag gctctttact attgctttat gataatgttt catagttgga 4320
tatcataatt taaacaagca aaaccaaatt aagggccagc tcattctctc cactcatgat 4380
ctatagatct atagatctct cgtgggatca ttgtttttct cttgattccc actttgtgg 4440
tctaagtact gtggtttcca aatgtgtcag ttcatagcc tgaagaacga gatcagcagc 4500
ctctgttcca catacacttc attctcagta ttgttttgcc aagttctaact tccatcagaa 4560
gctgactcta gatccgcgcg cgaagttcct atactttcta gagaatagga acttcggaat 4620
aggaacttca agottaagcg c 4641

```

<210> 10

<211> 4640

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Rluc tet02
insert

<400> 10

```

tctaggtaac cgatatecct gcaggggtga cctgcacgtc tagggcgag tagtccaggg 60
tttcccttgat gatgtcatac ttatcctgtc cttttttttt ccacagctcg cggttgagga 120

```

WO 2004/035782

PCT/EP2003/011233

25/39

caaactcttc	goggtctttc	cagtactcct	gcaggtgact	gactgagtcg	agatctgcga	180
totaagtaag	cttggcatte	cggtactggt	ggtaaagcca	ccatggcttc	caaggtgtac	240
gaccccgagc	aacgcaaacy	catgatcact	gggcctcagt	ggtgggctcg	ctgcaagcaa	300
atgaacgtgc	tggactcctt	catcaactac	tatgattccg	agaagcacgc	cgagaacgcc	360
gtgatttttc	tgcattggtaa	cgctgcotcc	agctacctgt	ggaggcacgt	cgtgcctcac	420
atcgagcccg	tggctagatg	catcatercct	gatctgatcg	gaatgggtaa	gtccggcaag	480
agcgggaatg	gctcatatcg	cctcctggat	cactacaagt	acctcaccgc	ttggtctcag	540
ctgctgaaoc	ttocaaagaa	aatcatcttt	gtgggccacg	actggggggc	ttgtctggcc	600
tttcaactact	cotacgagca	ccaagacaag	atcaaggcca	tcgtccatgc	tgagagtgtc	660
gtggacgtga	tcgagtcccg	ggacgagtgg	ctcgacatcg	aggaggatat	cgccctgate	720
aagagcgaag	agggcgagaa	aatgggtgctt	gagaataact	tottcgtcga	gacctgtctc	780
ccaagcaaga	tcattgcgga	actggagcct	gaggagtctg	ctgcctacct	ggagccattc	840
aaggagaagg	gcgaggttag	acggcctacc	ctctcctggc	ctcgcgagat	ccctctcgtt	900
aagggaggca	agcccgacgt	cgtccagatt	gtccgcaact	acaacgccta	ccttcggggc	960
agcgacgato	tgcctaagat	gttcatcgag	tccgacctcg	ggttcttttc	caacgctatt	1020
gtcgagggag	ctaagaagtt	ccctaacacc	gagttcgtga	aggtgaaggg	cctccacttc	1080
agccaggagg	acgctccaga	tgaatatgggt	aagtacatca	agagcttcgt	ggagcgcgtg	1140
ctgaagaacg	agcagtaatt	ctagaccggt	tcgagatcca	ggcgcggatc	aataaaagat	1200
cattatttttc	aatagatctg	tgtgttgggt	ttttgtgtgc	cttgggggag	ggggaggcca	1260
gaatgaggcg	cggccaaggg	ggagggggag	gccagaatga	cottggggga	gggggaggcc	1320
agaatgacct	tgggggaggg	ggaggccaga	atgaggcgcg	gatccgtcga	cttaattaag	1380
gccagggatc	ttcaagcaga	cctacagcaa	gttcgacaca	aactcacaca	acgatgacgc	1440
actactcaag	aactacgggc	tgcctactct	cttcagggaag	gacatggaca	aggtcgagac	1500
attcctgcgc	atcgtgcagt	gcccgtctgt	ggagggcagc	tgtggcttct	agctgcccgg	1560
tgtggcatcc	tgtgacccct	ccccagtgcc	tctcctggcc	ctggaagtgt	ccactccagt	1620
gcccaccagc	cttgtcctaa	taaaattaa	ttgcatcatt	ttgtctgact	aggtgtcctt	1680
ctataatatt	atggggtgga	ggggggtggt	atggagcaag	gggcaagttg	ggaagacaac	1740
ctgtaggggc	tgcggggtct	attgggaacc	aagctggagt	gcagtggcac	aatcttggct	1800
cactgcaatc	tecgcctcct	gggttcaagc	gattctcctg	cctcagcctc	ccgagttggt	1860
gggattccag	gcatgcatga	ccaggctcag	ctaatttttg	tttttttggt	agagacgggg	1920
tttcaccata	ttggccaggc	tgggtctcaa	ctcctaactc	caggtgatct	accaccttg	1980
gectcccaaa	ttgctgggat	tacaggcggt	aacctactgt	cccttccttg	tccttctgat	2040
tttaaaataa	ctataccagc	aggaggacgt	ccagacacag	cataggctac	ctggccatgc	2100
ccaaccggtg	ggacatttga	gttgcttgct	tggcactgtc	ctctcatgcy	ttgggtccac	2160
tcagtagatg	cctgttgaat	taagcttatt	taaataggcc	ggccataact	tcgtataatg	2220
tatgctatac	gaagttatgg	atccagtggg	aagacgcgca	ggcaaaacgc	accacgtgac	2280
ggagcgtgac	cgcgcgccga	gcccagggtc	gggcagggaag	agggcctatt	tcccatgatt	2340
ccttcacatc	tgcataatac	atacaaggct	gttagagaga	taattagaat	taatttgact	2400
gctaaacaaa	agatattagt	acaaaatacg	tgacgtagaa	agtaataatt	tcttgggtag	2460
tttgcagttt	taaaattatg	ttttaaaatg	gactatcata	tgcttaccgt	aacttgaaag	2520
tatttctgatt	tcttggcttt	atatatctcc	ctatcagtga	tagagaaagg	gattccaatt	2580
cagcgggagc	cacctgatga	agcttgatcg	ggtggctctc	gctgagttgg	aatccatttt	2640
tttctagact	cgagataaet	tcgtataatg	tatgctatac	gaagttatgg	cgcgccggta	2700
accgaagttc	ctatactttc	tagagaatag	gaacttcgga	ataggaactt	cttaggtcaa	2760
ttctaaccgg	taggggagtc	gcttttccca	aggcagctcg	gagcatgcgc	tttagcagcc	2820
cgcctgggca	cttggcgcta	cacaagtggc	ctctggcctc	gcacacattc	cacatccacc	2880
ggtaggcgcc	aaccggctcc	gttcttttgt	cgccctctcg	cgccaccttc	tactoctccc	2940
ctagtcagga	agttccccc	cgcgccgcag	ctcgcgtcgt	gcaggacgtg	acaaatggaa	3000
gtagcacgtc	tcactagtct	cgtgcagatg	gacagcaccg	ctgagcaatg	gaagcgggta	3060
ggcctttggg	gcagcggcca	atagcagctt	tgtcctctcg	cttctctggc	tcagaggtcg	3120
ggaaggggtg	ggtccggggg	cgggctcagg	ggcgggctca	ggggcggggc	gggcgcccga	3180
aggtcctccg	gagggccggc	attctgcacg	cttcaaaagc	gcacgtctgc	cgcgctgttc	3240
tectcttcc	catctccggg	cctttcgaac	atgggccaat	atgggatcgg	ccattgaaca	3300
agatggattg	cacgcaggtt	ctccggccgc	ttgggtggag	aggctattcg	gctatgactg	3360
ggcacaacag	acaatcggtc	gctctgatgc	cgcctgttcc	cggctgtcag	cgcaggggcg	3420
cccggttctt	tttgtcaaga	ccgacctgtc	cgggtgccctg	aatgaactgc	aggacgaggc	3480
agcgcggcta	tcgtggctgg	ccacgacggg	cgttctctgc	gcagctgtgc	tcgacgttgt	3540
cactgaagcg	ggaagggact	ggctgctatt	gggcgaagtg	ccggggcagg	atctcctgtc	3600
atctcacctt	gctcctgccg	agaaagtatc	catcatggct	gatgcaatgc	ggcggctgca	3660
tacgcttgat	ccggctacct	gcccattcga	ccaccaagcg	aaacatcgca	tcgagcgagc	3720
acgtactcgg	atggaagccg	gtcttgtcga	tcaggatgat	ctggacgaag	agcatcaggg	3780
gctcgcgcca	gcgaactgt	tcgccagcct	caaggcgcgc	atgcccgacg	gcgaggatct	3840
cgtcgtgacc	catggcgatg	cctgcttgcc	gaatatcatg	gtggaaaatg	gccgcttttc	3900

WO 2004/035782

PCT/EP2003/011233

26/39

```
tggattcatc gactgtggcc ggctgggtgt ggcggaccgc taccaggaca tagcgttggc 3960
taccogtgat attgctgaag agcttggcgg cgaatgggct gaccgcttcc tcgtgcttta 4020
cggtatcgcc gctcccgaatt cgcagegcac cgccttctat cgccttcttg acgagttctt 4080
ctgaggggat cgatccgctg taagtctgca gaaattgatg atctattaaa caataaagat 4140
gtccactaaa atggaagttt ttctgtcat actttgttaa gaagggtgag aacagagtac 4200
ctacattttg aatggaagga ttggagctac ggggggtggg gtgggggtggg attagataaa 4260
tgctgtctct ttactgaagg ctctttacta ttgctttatg ataagtttc atagttggat 4320
atcataaattt aaacaagcaa aaccaaaatta agggccagct cattcotccc actcatgato 4380
tatagatcta tagatctctc gtgggcatcat tgtttttctc ttgattccca ctttgtgggt 4440
ctaagtactg tggttttcaa atgtgtcagt ttcatagcct gaagaacgag atcagcagcc 4500
tctgttccac atacacttca ttctcagtat tgttttgcca agttctaat ccatacagaag 4560
ctgactctag atcccgcgcc gaagttccta tactttctag agaataaggaa cttcgggaata 4620
ggaaacttcaa gcttaagcgc 4640
```

<210> 11

<211> 3387

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: H1 tet5' shRNA
vector

<400> 11

```
agctcgatat cggccggcca taacttcgta taatgtatgc tatacgaagt tatggatcct 60
cacagtaggt ggcacgttcc ctttctgact gcccgcccc cgcattgccg cccgcgatat 120
tgagctccga acctctcgcc ctgcgcgcgc cgggtgctccg tcgcccgcgc gccgccatgg 180
aattcgaacg ctgacgtcat caaccgcgtc caaggaatcg cgggcccagt gtcactaggc 240
gggaacaccc agcgcgcgtg cgccttgcca ggaagatggc tgtgaggagc aggggagtgg 300
cgccctgcaa tatttgcatt tcgctatgtg ttctgggaaa tcaccataaa cgtgaaattc 360
cctatcagtg atagagatta taagttctgt atgagaccac tctttcccag gattccaatt 420
cagcgggagc caoctgatga agottgatcg ggtggtcttc gctgagttgg aatccatttt 480
ttcttaggat aacttcgtat aatgtatgct atacgaagtt atggcgcgcc ggtaccagc 540
ttttgttccc tttagttagg gtttaatttcg agcttggcgt aatcatggtc atagctgttt 600
cctgtgtgaa attgttatcc gctcaccaatt ccacacaaca tacgagccgg aagcataaag 660
tgtaaagcct ggggtgccta atgagtgagc taactcacat taattgcgtt gcgctcactg 720
cccgttttcc agtcgggaaa cctgtcgtgc cagctgcatt aatgaatcgg ccaacgcgcg 780
gggagaggcg gtttgcgtat tgggcgctct tcgccttcc cgtcactga ctcgctgcgc 840
tcggtcgttc ggctgcggcg agcggatatca gctcactcaa aggcggtaat acggttatcc 900
acagaatcag gggataacgc aggaagaac atgtgagcaa aaggccagca aaaggccagg 960
aaccgtaaaa aggcgcggtt gctggcggtt ttccataggc tccgcccccc tgacgagcat 1020
cacaaaaatc gacgctcaag tcagaggttg cgaaccgca caggactata aagataccag 1080
gcgtttcccc ctggaagctc cctcgtgcgc tctcctgttc cgacctgcc gcttaccgga 1140
tacctgtcgg cttttctccc ttcggaagc gtggcgcttt ctcatagctc acgctgtagg 1200
tatctcagtt cgggtgtagt cgttcgctcc aagctgggct gtgtgcacga accccccgtt 1260
cagcccgacc gctgcgcctt atccggtaac tatcgtcttg agtccaacce ggtaagacac 1320
gacttatcgc cactggcagc agccactggt aacaggatta gcagagcgag gtatgtaggc 1380
ggtgtctacg agttcttgaa gtggtggcct aactacggct acactagaag gacagtattt 1440
ggatatctgc ctctgctgaa gccagttacc ttccggaaaa gagttggtag ctcttgatcc 1500
ggcaaaacaaa ccaccgctgg tagcgtggtt tttttgttt gcaagcagca gattacgcgc 1560
agaaaaaaag gatctcaaga agatcctttg atcttttcta cggggtctga cgtcagtggt 1620
aacgaaaact caggttaagg gattttggct atgagattat caaaaaggat cttcacctag 1680
atccttttaa attaaaaatg aagtttttaa tcaatctaaa gtatatatga gtaaaacttg 1740
tctgacagtt accaatgctt aatcagtgag gcacctatct cagcgatctg tctatttcgt 1800
tcacocatag ttgcctgact ccccgctcgt tagataacta cgatacggga gggcttacca 1860
tctggcccca gtgctgcaat gataccgcga gaccacgct caccggctcc agatttatca 1920
gcaataaacc agccagccgg aaggcccgag cgcagaagtg gtcctgcaac tttatccgce 1980
tccatccagt ctattaattg ttgcccggaa gctagagtaa gtagttcgcc agttaaatag 2040
ttgcgcaacg ttgttgccat tgctacaggc atcgtggtgt cagctcgtc gtttggtatg 2100
gcttcattca gctccggttc ccaacgatca aggcaggtta catgatcccc catgttgtgc 2160
aaaaaagcgg ttagctcctt cggctcctcg atcgttgtca gaagtaagtt ggccgcagtg 2220
ttatcactca tgggttatggc agcactgcat aattctctta ctgtcatgcc atccgtaaga 2280
```

WO 2004/035782

PCT/EP2003/011233

27/39

```

tgcttttctg tgactggtga gtactcaacc aagtcattct gagaatagtg tatgcgggcga 2340
ccgagttgct cttgcccggc gtcaatacgg gataataccg cgccacatag cagaacttta 2400
aaagtgtcca tcattggaaa acgttcttcg gggcgaaaac tctcaaggat cttaccgctg 2460
ttgagatcca gttcgatgta acccactcgt gcacccaact gatcttcagc atcttttact 2520
ttcaccagcg tttctgggtg agcaaaaaca ggaaggcaaa atgccgcaaa aaagggaata 2580
agggcgacac ggaaatgttg aatactcata ctcttccttt ttcaatatta ttgaagcatt 2640
tatcagggtt attgtctcat gagcggatac atatttgaat gtatttagaa aaataaaca 2700
atagggttgc cgcgcacatt tccccgaaaa gtgcoaccta aattgtaage gttaatattt 2760
tgtaaaaatt cgcgttaaat ttttgtaaaa tcagctcatt ttttaacca 2820
tcggcaaaat cccttataaa tcaaaagaat agaccgagat aggggtgagt gttgttccag 2880
tttggaacaa gagtccacta ttaaagaacg tggactccaa cgtcaaaggg cgaaaaaccg 2940
tctatcaggg cgatggccca ctacgtgaac catcaccta atcaagtttt ttggggtcga 3000
ggtgccgtaa agcactaaat cggaaacctc aagggagccc ccgatttaga gcttgacggg 3060
gaaagccggc gaacgtggcg agaaaggaa ggaagaaagc gaaaggagcg ggcgctaggg 3120
cgctggcaag tgtagcggtc acgctgcgcg taaccaccac acccgccgcg cttaatgcgc 3180
cgctacaggg cgcgtcccat tcgccattca ggctgcgcaa ctgttgggaa gggcgatcgg 3240
tgccggcctc ttcgctatta cgccagctgg cgaaaggggg atgtgctgca aggcgattaa 3300
gttgggtaac gccagggttt tcccagtcac gacgttgtaa aacgacggcc agtgaattgt 3360
aatacgactc actatagggc gaattgg 3387

```

<210> 12

<211> 3387

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: H1 tet3' shRNA vector

<400> 12

```

agtcgatat cggccggcca taacttcgta taatgtatgc tatacgaagt tatggatcct 60
cacagtaggt ggcacgttc ctttctgact gccgcgccc cgcatgccgt cccgcgatat 120
tgagctccga acctctegcc ctgccgcgcg cgggtgctccg tcgccgcgcg gccgccatgg 180
aattcgaacg ctgacgtcat caaccgcgtc caaggaatcg cgggcccagt gtcactaggc 240
gggaacaccc agcgcgcgtg cgccctggca ggaagatggc tgtgaggagc aggggagtgg 300
cgccctgcaa tatttgcatt tcgctatgtg ttctgggaaa tcaccataaa cgtgaaatgt 360
ctttggattt gggaatctta taagtcccta tcagttagat agattcccag gattccaatt 420
cagcgggagc cacctgatga agcttgatcg ggtggctctc gctgagttgg aatccatttt 480
tttctaggat aacttcgtat aatgtatgct atacgaagtt atggcgcgcc ggtaccagc 540
ttttgttccc tttagttagg gtttaatttc agcttggcgt aatcatggtc atagctgttt 600
cctgtgtgaa attgttatcc gctcacaatt ccacacaaca tacgagccgg aagcataaag 660
tgtaaagcct ggggtgccta atgagtgcgc taactcacat taattgcgtt gcgctcactg 720
cccgttttcc agtcgggaaa cctgtcgtgc cagctgcatt aatgaatcgg ccaacgcgcg 780
gggagagggc gtttgcttat tgggcgctct tccgcttctc cgtcactga ctogotgogc 840
tcggtcgttc ggctgcggcg agcggtatca gctcactcaa aggcggtaat acggttatcc 900
acagaatcag gggataacgc aggaagaac atgtgagcaa aaggccagca aaaggccagg 960
aaccgtaaaa aggcgcgctt gctggcgttt ttccataggg tccgcccccc tgacgagcat 1020
cacaaaaatc gacgctcaag tcagaggttg cgaaaccoga caggactata aagataccag 1080
gcgttttccc ctggaaagtc cctcgtgcgc tctcctgttc cgaccctgoc gottaccgga 1140
tacctgtccg cctttctccc ttcggaagc gtggcgcttt ctcatagctc acgctgtagg 1200
tatctcagtt cgggttaggt cgctcgtccc aagctgggct gtgtgcacga acccccgtt 1260
cagcccgacc gctgcgcctt atccggtaac tatcgtcttg agtccaaccc ggtaagacac 1320
gacttatcgc cactggcagc agccactggg aacaggatta gcagagcgag gtatgtaggc 1380
ggtgctacag agttcttgaa gtgggtggcct aactacggct acactagaag gacagtattt 1440
ggtatctgcg ctctgctgaa gccagttacc ttcggaaaaa gagttggtag ctcttgatcc 1500
ggcaaacaaa ccacgctgg tagcgggtgt ttttttgtt gcaagcagca gattaogcgc 1560
agaaaaaaag gatcctttg agatcctttg atcttttcta cggggtctga cgctcagttg 1620
aacgaaaact caggttaagg gattttggtc atgagattat caaaaaggat cttcacctag 1680
atccttttaa attaaaaatg aagtttttaa tcaatctaaa gtatatatga gtaaaccttg 1740
tctgacagtt accaatgctt aatcagtgag gcacctatct cagcgatctg tctatttctg 1800
tcatccatag ttgcctgact ccccgctcgt tagataacta cgatacggga gggcttacca 1860
tctggcccca gtgctgcaat gataccgcga gaccacgct caccggtctc agatttatca 1920

```

WO 2004/035782

PCT/EP2003/011233

36/39

acgagcatca	tcctctgcat	ggtcagggtca	tggatgagca	gacgatgggtg	caggatatcc	2220
tgctgatgaa	gcagaacaac	tttaacgccc	tgogctgttc	gcattatccg	aaccatccgc	2280
tgtggtacac	gctgtgagac	cgctacggcc	tgtatgtggg	ggatgaagcc	aatattgaaa	2340
cccacggcat	gggtccaatg	aatcgtctga	ccgatgatcc	gcgctggcta	ccggcgatga	2400
gcgaacgcgt	aacgcgaatg	gtgcagcgcg	atcgtaatca	cccagtggtg	atcatctggt	2460
cgctggggaa	tgaatcaggg	caaggcgcta	atcacgacgc	gctgtatcgc	tggatcaaat	2520
ctgtcgatcc	ttcccgccc	gtgcagtatg	aaggogggcg	agccgacacc	acggccaacc	2580
atattatttg	cccgatgtac	gcgcgcgtg	atgaagacca	gcccctcccg	gctgtgccga	2640
aatgggtccat	caaaaaatgg	ctttcgctac	ctggagagac	gcgcccgtg	atcctttgcg	2700
aatacgccc	cgcgatgggt	aacagtcttg	gcgggttcgc	taaatactgg	caggogtttc	2760
gtcagtatcc	ccgtttacag	ggcggttcg	tctgggactg	ggtggatcag	tcgctgatta	2820
aatatgatga	aaacggcaac	ccgtgggtgg	cttacggcg	tgattttggc	gatacgccga	2880
acgatcgcca	gttctgtatg	aacgggtctg	tctttgccga	ccgcacgcgc	catccagcgc	2940
tgacggaagc	aaaacaccag	cagcagtttt	tccagttccg	tttatccggg	caaaccatcg	3000
aagtgaccag	cgaatacctg	ttccgtcata	gcgataacga	gctcctgcac	tggatgggtg	3060
cgctggatcg	taagccgtg	gcaagcggtg	aagtgcctct	ggatgtcgct	ccacaaggta	3120
aacagttgat	tgaactgcct	gaactacgcg	agccggagag	gcgcccggca	ctctggctca	3180
cagtacgcgt	agtgaaccgc	aacgcgacgc	catggtcaga	agccgggcac	atcagcgcc	3240
ggcagcagtg	gcgtctggcg	gaaaacctca	gtgtgacgct	ccccgcgcgc	tcccacgcca	3300
tccgcgcatct	gaccaccagc	gaaatggatt	tttgcatcga	gctgggtaat	aagcgttggc	3360
aatttaaccg	ccagtcaggg	tttctttcac	agatgtggat	tggcgataaa	aaacaactgc	3420
tgacgcccgt	gcgcgatcag	ttcacccgtg	caccgctgga	taacgacatt	ggcgtaagtg	3480
aagcgaccgc	catttgacct	aacgcctggg	tgcgaacgct	gaaggogggc	ggccattacc	3540
aggcggaagc	agcgtgttg	cagtgcacgc	cagatacact	tgctgatgcg	gtgctgatta	3600
cgaccgctca	cgctggcgag	catcagggga	aaaccttatt	tatcagccgc	aaaacctacc	3660
ggattgatgg	tagtgggtcaa	atggcgatta	ccgttgatgt	tgaagtggcg	agcgatacac	3720
cgcatccggc	gcggattggc	ctgaactgcc	agctggcgca	ggtagcagag	cggttaaact	3780
ggctcggatt	agggccgcaa	gaaaactatc	ccgaocgcct	tactgocgcc	tgttttgacc	3840
gctgggatct	gccattgtca	gacatgtata	ccccgtacgt	cttcccgcgc	gaaaacgggtc	3900
tgcgctgcgg	gacgcgcgaa	ttgaattatg	gcccacacca	gtggcgcggc	gacttccagt	3960
tcaacatcag	ccgctacagt	caacagcaac	tgatggaaac	cagccatcgc	catctgctgc	4020
acgcggaaga	aggcacatgg	ctgaatatcg	acggtttcca	tatggggatt	ggtggcgagc	4080
actcctggag	cccgtcagta	tcggcggaat	tacagotgag	cgccggtcgc	taccattacc	4140
agttgggtctg	gtgtcaaaaa	taataataac	cgggcaggcc	atgtctgccc	gtattttcgcg	4200
taaggaaatc	cattatgtac	tattttaaaa	acacaaactt	ttggatgttc	ggtttattct	4260
ttttctttta	cttttttate	atgggagcct	acttcccgtt	tttcccgcgt	tggctacatg	4320
acatcaacca	tatcagcaaa	agtgcacg	gtattatatt	tgcgcgtatt	tctctgttct	4380
cgctattatt	ccaaccgctg	tttggtctgc	tttctgacaa	actcggcctc	gactctaggc	4440
ggccgcgctg	acctcgagat	ccaggcgcg	atcaataaaa	gatoattatt	ttcaattgat	4500
ctgtgtgttg	gttttttgtg	tgccttgggg	gagggggagg	ccagaatgag	gcgcggccaa	4560
ggggggagg	gaggccagaa	tgaccttggg	ggagggggag	gccagaatga	ccttggggga	4620
ggggggaggc	agaatgaggc	gcgccccgcg	gtacogagct	cgaattcact	ggccgtcggt	4680
ttacaacgto	gtgactggga	aaaccctggc	gttaccocaa	ttaatcgcc	tgcagcacat	4740
ccccctttgc	ccagctggcg	taatagcgaa	gaggccccga	ccgatcgccc	ttcccaacag	4800
ttgcgcagcc	tgaatggcga	atggcgccgt	atgcccgtatt	ttctccttac	gcactctgtc	4860
ggtattttcac	accgcattatg	gtgcactctc	agtaataact	gctctgatgc	cgcatagtta	4920
agccagcccc	gacaccgcgc	aacacccgct	gacgcgccct	gacgggcttg	tctgctcccg	4980
gcacccgctt	acagacaagc	tgtgaccgtc	tccgggagct	gcattgtgta	gaggttttca	5040
ccgtcatcac	cgaacgcgcg	gagacgaaag	ggcctcgtga	tacgcctatt	tttatagggt	5100
aatgtcatga	taataatggt	ttcttagacg	tcagggtggca	cttttggggg	aatgtgcgc	5160
ggaaccccta	tttgtttatt	tttctaaata	cattcaataa	tgtatccgct	catgagacaa	5220
taaccctgat	aaatgcttca	ataatattga	aaaagggaaga	gtatgagtat	tcaacatttc	5280
cgtgtgcgcc	ttattccctt	ttttgoggca	ctgtttttgc	ctgtttttgc	tcacccagaa	5340
acgctggtga	aagtaaaaaga	tgctgaagat	cagttgggtg	cacgagtggg	ttacatcgaa	5400
ctggatctca	acagcggtaa	gatccttgag	agttttcgcc	ccgaagaacg	ttttccaatg	5460
atgagcactt	ttaaagtctt	gctatgtggc	gcggtattat	cccgatttga	cgccgggcaa	5520
gagcaactcg	gtcgccgcgt	acactattct	cagaatgact	tgggtgagta	ctcaccagtc	5580
acagaaaagc	atcttacgga	tggcatgaca	gtaagagaat	tatgcagtgc	tgcataaacc	5640
atgagtgata	acactgcggc	caacttactt	ctgacaacga	tccggaggacc	gaaggagcta	5700
accgcttttt	tgcacaacat	gggggatcat	gtaactcgcc	ttgatcggtg	ggaaccggag	5760
ctgaatgaag	ccataccaaa	cgacgagcgt	gacaccacga	tgcctgtagc	aatggcaaca	5820
acgttgccga	aactattaac	tggcgaacta	cttactctag	cttcccggca	acaatttaata	5880
gactggatgg	aggcggataa	agttgcagga	ccacttctgc	gctcggccct	tccggctggc	5940

WO 2004/035782

PCT/EP2003/011233

37/39

tggtttattg	ctgataaatc	tggagccggt	gagcgtgggt	ctcgcggtat	cattgcagca	6000
ctggggccag	atggtaagcc	ctcccgatc	gtagttatct	acacgacggg	gagtcaggca	6060
actatggatg	aacgaatatg	acagatcgct	gagatagggtg	cctcactgat	taagcattgg	6120
taactgtcag	accaagttta	ctcatatata	cttttagattg	atttaaaact	tcattttttaa	6180
tttaaaaagg	tctaggtgaa	gatccttttt	gataatctca	tgaccaaact	cccttaacgt	6240
gagttttcgt	tccactgagc	gtcagacccc	gtagaaaaga	tcaaaggatc	ttcttgagat	6300
cctttttttc	tgcgcgtaat	ctgctgcttg	caaacaaaaa	aaccacggct	accagcggtg	6360
gtttgtttgc	cggatcaaga	gctaocaaact	ctttttccga	aggtaactgg	cttcagcaga	6420
gcgcagatac	caaatactgt	ccttctagtg	tagccgtagt	tagggccacca	cttcaagaac	6480
tctgtagcac	cgcctacata	cctcgctctg	ctaactcctg	taccagtggc	tgctgccagt	6540
ggcgataagt	cgtgtcctac	cgggttggac	tcaagacgat	agttaccgga	taaggcgag	6600
cggtcgggct	gaacgggggg	ttcgtgcaca	cagcccagct	tggagcgaac	gacctacacc	6660
gaactgagat	acctacagcg	tgagctatga	gaaagcgcca	cgttcccgga	aggagaaag	6720
cgggacaggt	atccggtaag	cggcagggtc	ggaacaggag	agcgacagag	ggagcttcca	6780
gggggaaacg	cctggtatct	ttatagtcct	gtcgggttcc	gccacctctg	acttgagcgt	6840
cgatttttgt	gatgctcgtc	aggggggcgg	agcctatgga	aaaacgccag	caacgcggcc	6900
tttttacggg	tcctggcctt	ttgctggcct	tttgctcaca	tggttctttc	tgcggttatcc	6960
cctgattctg	tggataaaccg	tattaccgcc	tttgagttag	ctgataccgc	tcgcccagc	7020
cgaacgaccg	agcgacagca	gtcagtgagc	gagggaagcgg	aagagcgccc	aatacgcaaa	7080
cgcctctccc	cgcgcgcttg	gccgattcat	taatgcagct	ggcacgacag	gtttcccagc	7140
tggaaagcgg	gcagtgagcg	gcagccaatt	aatgtgagtt	agctcactca	ttaggcaccc	7200
caggctttac	actttatgct	tccggctcgt	atgtgtgtg	gaattgtgag	cggataacaa	7260
tttcacacag	gaaacagcta	tgaccatgat	tacgocaaagc	tagcccgggc	tagcttgcat	7320
gcctgcaggt	tt					7332

<210> 18

<211> 5878

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CAGGS-cre

<400> 18

ttcgacattg	attattgact	agttattaat	agtaatcaat	tacgggggtca	ttagttcata	60
gcccataat	ggagttccgc	gttacataac	ttacggtaaa	tggcccgcc	ggctgacgc	120
ccaacgaccc	ccgcccattg	acgtcaataa	tgacgtatgt	tcccatagta	acgccaatag	180
ggactttcca	ttgacgtcaa	tgggtggact	atttacggta	aaotgoccc	ttggcagtag	240
atcaagtgt	tcatatgcc	agtaacgccc	ctattgacgt	caatgacgg	aaatggccc	300
cctggcatta	tgcccagtag	atgaccttat	gggactttcc	tacttggcag	tacatctacg	360
tattagtc	cgctattacc	atgggtcgag	gtgagcccca	cgttctgctt	cactctcccc	420
atctccccc	cctccccc	cccaattttg	tatttattta	ttttttaatt	attttgtgca	480
gcgatggggg	cggggggggg	ggggggcgcc	ggcggcggg	gccccgggg	gcgaggggg	540
ggcgggggcg	aggcgggag	gtgcggcgcc	agccaatcag	agcggcgcgc	tccgaaagtt	600
tccttttatg	gcgagggcg	ggcgggcgcc	gcccataaaa	aagcgaagcg	cgcgggcggg	660
gggagtcgct	gcgttgccct	cgcgccgtgc	cccgcctcgc	gcccgcgcgc	gcccgcgcgc	720
ccggtctctga	ctgaccgctg	tactcccaca	ggtgagcggg	cgggacggcc	cttctcctcc	780
gggctgta	tagcgcttgg	tttaatgacg	gotcgtttct	tttctgtggc	tgcggtgaaag	840
ccttaaaagg	ctccgggagg	gccctttgtg	cgggggggag	cggctcgggg	ggtgcgtgcg	900
tgtgtgtgtg	cgtggggagc	gccgcgtg	gccgcgctg	cccggcggtc	gtgagcgctg	960
cgggcgcggc	gcggggcttt	gtgcgctccg	cgtgtgcgcg	aggggagcgc	ggcggggggc	1020
ggtgccccgc	ggtgcggggg	ggctgcgagg	ggaacaaagg	ctgcgtgcgg	ggtgtgtgcg	1080
tgggggggtg	agcagggggg	gtgggcgcgg	cggctgggct	gtaacccccc	cctgcacccc	1140
cctccccgag	ttgctgagca	cggcccggtc	tccgggtcgg	ggctccgtgc	ggggcggtgg	1200
gcggggctcg	ccgtgccggg	cgggggggtg	cggcaggtgg	gggtgccggg	cggggcgggg	1260
ccgcctcggg	ccggggaggg	ctcgggggag	gggcgcggcg	gccccggagc	gcccgcggct	1320
gtcgaggcgc	ggcgagccgc	agccattg	ttttatggta	atcgtgcgag	agggcgagcg	1380
gaattccttt	gtcccaaatc	tggcggaagc	gaaactctgg	aggcgccgcc	gcacccccctc	1440
tagcgggcgc	gggcgaagcg	gtgcggcgcc	gcaggaagg	aaatggggcg	ggagggcctt	1500
cgtgcgtcgc	cgcgcgcgcg	tccccttctc	catctccagc	ctcggggctg	ccgcaggggg	1560
acggctgcct	tcggggggga	cggggcaggg	cgggggttcg	cttctggcgt	gtgacgggcg	1620
gctctagtaa	gcgttggggg	gagtactccc	tctcaaaagc	gggcatgact	tctgcgctaa	1680

WO 2004/035782

38/39

PCT/EP2003/011233

gattgtcagt	ttccaaaaac	gaggaggatt	tgatattcac	ctggcccgcg	gtgatgcctt	1740
tgagggtggc	cgcgtccatc	tggtcagaaa	agacaatcct	tttgttgtca	agcttgagggt	1800
gtggcaggct	tgagatctgg	ccatacactt	gagtgacatt	gacatccact	ttgcctttct	1860
ctccacaggt	gtccactccc	agggcggcct	cgaccatgcc	caagaagaag	aggaagggtgt	1920
ccaatttact	gaccgtacac	caaaatttgc	ctgcattacc	ggtcgatgca	acgagtgatg	1980
aggttcgcaa	gaacctgatg	gacatgttca	gggatcgcca	ggcgttttct	gagcatacct	2040
ggaaaatgct	tctgtccggt	tgccgggtcgt	gggcggcatg	gtgcaagtgt	aataaccgga	2100
aatggtttcc	cgcagaacct	gaagatgttc	gcgattatct	tctatatctt	caggcgcgcg	2160
gtctggcagt	aaaaactatc	cagcaacatt	tgggccagct	aaacatgctt	catcgtcgggt	2220
cggggctgcc	acgaccaagt	gacagcaatg	ctgtttcact	ggttatgcgg	cggatccgaa	2280
aagaaaactg	tgatgccggt	gaacgtgcaa	aacaggctct	agcgttcgaa	cgcactgatt	2340
tcgaccaggt	tcgttcactc	atggaaaaata	cgcatcgctg	ccaggatata	cgtaatctgg	2400
catttctggg	gattgcttat	aacacccgtg	tacgtatagc	cgaaattgcc	aggatcaggg	2460
ttaaagatat	ctcacgtaet	gacgggtgga	gaatgttaat	ccatattggc	agaacgaaaa	2520
cgctgggttag	caecgcagggt	gtagagaagg	cacttagcct	gggggtaact	aaactggctg	2580
agcgatggat	ttcogtctct	ggtgtagctg	atgatccgaa	taactacctg	ttttgccggg	2640
tcagaaaaaa	tggtgttgcc	gcgccatctg	ccaccagcca	gctatcaact	cgcgcctctg	2700
aagggattttt	tgaagcaact	catcgattga	tttaccggcg	taaggatgac	tctggtcaga	2760
gatacctggc	ctggctcgga	cacagtcccc	gtgtcggagc	cgcgcgagat	atggcccgcg	2820
ctggagtttc	aataccggag	atcatgcaag	ctgggtggctg	gaccaatgta	aatattgtca	2880
tgaactatat	ccgtaacctg	gatatgaaa	caggggcaat	ggtgcgcctg	ctggaagatg	2940
gcgattagcc	attaacgcgt	aatgattg	agatccacta	gttctagggc	cgcgtcgacc	3000
tcgagatcca	ggcgcggatc	aataaaaagt	cattattttc	aatagatctg	tgtgttggtt	3060
ttttgtgtgc	cttgggggag	ggggaggcca	gaatgaggcg	cggccaaggg	ggagggggag	3120
gccagaatga	ccttggggga	gggggaggcc	agaatgacct	tgggggaggg	ggaggccaga	3180
atgaggcgcg	ccccgggta	cggagctcga	attcactggc	cgtcgtttta	caacgtcgtg	3240
actgggaaaa	ccctggcggt	acccaaacta	atcgccctgc	agcacatccc	cctttcgcca	3300
gctggcgtaa	tagcgaagag	gcccgcaccg	atcgcccttc	ccaacagttg	cgcagcctga	3360
atggcgaaatg	gcgcctgatg	cggatattttc	tccttacgca	tctgtgcggt	atttcacacc	3420
gcatatggtg	cactctcagt	acaatctgct	ctgatgcgcg	atagttaagc	cagccccgac	3480
accgcgaacg	accgctgac	gcgccctgac	ggccttgtct	gctcccggca	tccgcttaca	3540
gacaagctgt	gaccgtctcc	gggagctgca	tgtgtcagag	gttttcaccg	tcatacccca	3600
aacgcgcgag	acgaaagggc	ctcgtgatac	gcctattttt	ataggttaat	gtcatgataa	3660
taatggtttc	ttagacgtca	ggtggcactt	ttcggggaaa	tgtgcgcgga	acccctattt	3720
gtttattttt	ctaaatacat	tcaaataatg	atccgctcat	gagacaataa	ccctgataaa	3780
tgcttcaata	atattgaaaa	aggaagagta	tgagtattca	acatttcctg	gtcgccctta	3840
ttcccttttt	tgcggcattt	tgcccttcctg	tttttgctca	cccagaaacg	ctgggtgaaag	3900
taaaagatgc	tgaagatcag	ttgggtgcac	gagtggttta	catcgaaactg	gatctcaaca	3960
goggttaagt	ccttgagagt	tttcgccccg	aagaacgttt	tccaatgatg	agcactttta	4020
aagtctctgt	atgtggcgcg	gtattatccc	gtattgacgc	cgggcaagag	caactcggtc	4080
gcgcataaca	ctattctcag	aatgacttgg	ttgagtactc	accagtcaca	gaaaagcctc	4140
ttacggatgg	catgacagta	agagaattat	gcagtgtctg	cataaccatg	agtataaaca	4200
ctgcggccaa	cttacttctg	acaacgatcg	gaggaccgaa	ggagctaacc	gcttttttgc	4260
acaacatggg	ggatcatgta	actcgccttg	atcgttggga	accggagctg	aatgaagcca	4320
taccaaacga	cgagcgtgac	accacgatgc	ctgtagcaat	ggcaacaacg	ttgcgcaaac	4380
tattaactgg	cgaactactt	actctagctt	cccggcaaca	attaatagac	tggatggagg	4440
oggataaagt	tgcaggacca	cttctgcgct	cggcccttcc	ggctggctgg	tttattgctg	4500
ataaatctgg	agccggtgag	cgtgggtctc	gcggtatcat	tcagcactg	gggcccagatg	4560
gtaagccctc	ccgtatcgta	gttatctaca	cgacggggag	tcaggcaact	atggatgaac	4620
gaaatagaca	gatcgctgag	ataggtgcct	cactgattaa	gcattggtaa	ctgtcagacc	4680
aagtttactc	atatatactt	tagattgatt	taaaacttca	tttttaattt	aaaaggatct	4740
aggtgaagat	cctttttgat	aatctcatga	ccaaaatccc	ttaacgtgag	ttttcgttcc	4800
actgagcgtc	agaccccgta	gaaaagatca	aaggatcttc	ttgagatcct	ttttttctgc	4860
gcgtaactct	ctgcttgcaa	acaaaaaac	caccgttacc	agcgggtggt	tgtttgcggg	4920
atcaagagct	accaactctt	tttcggaagg	taactggctt	cagcagagcg	cagataccaa	4980
atactgtcct	tctagtgtag	ccgtagttag	gccaccactt	caagaactct	gtagcaccgc	5040
ctacatacct	cgctctgcta	atcctgttac	cagtggctgc	tgccagtggc	gataagtcgt	5100
gtcttaccgg	gttggaactca	agacgatagt	tacoggataa	ggcgacggcg	tcgggctgaa	5160
cgggggggtt	gtgcacacag	cccagcttgg	agcgaacgac	ctacaccgaa	ctgagatacc	5220
tacagcgtga	gctatgagaa	agcgccacgc	ttcccgaagg	gagaaaggcg	gacaggtatc	5280
cggtaagcgg	cagggctcga	acaggagagc	gcacgagggg	gcttccaggg	ggaaacgcct	5340
ggtatcttta	tagtccctgtc	gggtttcgcc	acctctgact	tgagcgtcga	tttttgtgat	5400
gctcgtcagg	ggggcgggagc	ctatggaaaa	acgccagcaa	cgcggccttt	ttacggttcc	5460

WO 2004/035782

PCT/EP2003/011233

39/39

tggccttttg	ctggcctttt	gctcacatgt	tctttctctg	gttatccct	gattctgtgg	5520
ataaccgtat	taccgccttt	gagtgagctg	ataccgctcg	ccgcagccga	acgaccgagc	5580
gcagcgagtc	agtgagcgag	gaagcggaag	agcgcccaat	acgcaaaccg	cctctccccg	5640
cgcgttggcc	gattcattaa	tgacagctggc	acgacagggt	tcccgactgg	aaagcgggca	5700
gtgagcgcaa	cgcaattaat	gtgagtttagc	tcactcatta	ggcaccccag	gctttacact	5760
ttatgcttcc	ggctcgatatg	ttgtgtggaa	ttgtgagcgg	ataacaattt	cacacaggaa	5820
acagctatga	ccatgattac	gccaagctag	cccgggctag	cttgcattgcc	tgcagggt	5878

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.